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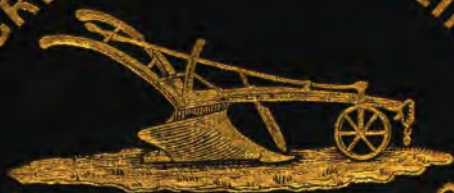
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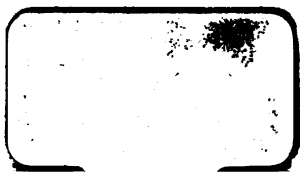
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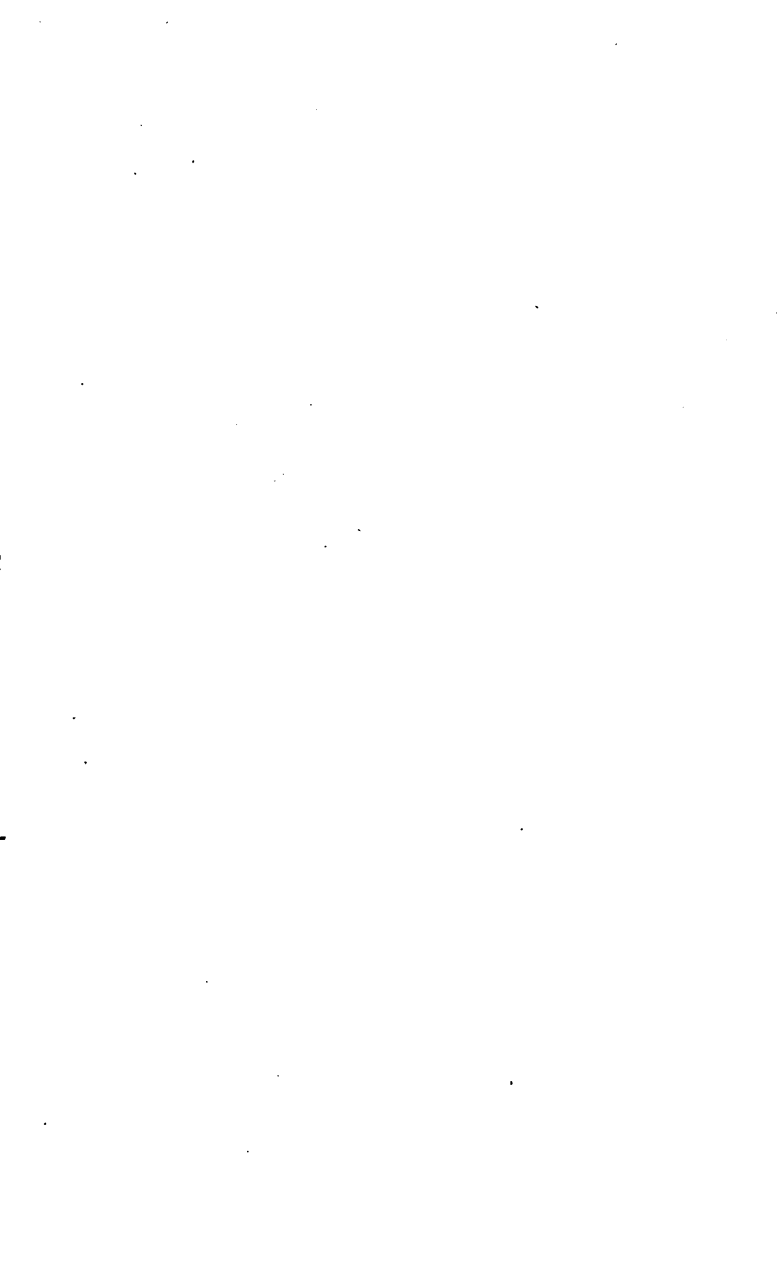


IN
NEW SOUTH WALES.

Price 7/-

44.40.





**AN ACCOUNT
OF
AGRICULTURE AND GRAZING
IN
NEW SOUTH WALES,**

**AND OF SOME OF
ITS MOST USEFUL NATURAL PRODUCTIONS,
WITH OTHER INFORMATION,
IMPORTANT TO THOSE WHO ARE ABOUT TO EMIGRATE TO
THAT COUNTRY,**

**THE RESULT OF SEVERAL YEARS' RESIDENCE AND
PRACTICAL EXPERIENCE.**

**BY THE LATE
JAMES ATKINSON, Esq.
SECOND EDITION,**

REVISED AND CORRECTED.

**TO WHICH HAVE BEEN ADDED
SOME USEFUL DATA AND REMARKS DERIVED FROM OTHER
AUTHENTIC SOURCES.**

L O N D O N :

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EDITOR'S PREFACE.

WE believe that in re-publishing a part of the late Mr. ATKINSON's Account of Agriculture and Grazing in New South Wales, we render an acceptable service to those who contemplate becoming colonists in that country. The work, when published in 1826, was deemed one of the most useful essays that had then appeared. Much, however, related to a state of things which no longer exists, and is now therefore omitted, and its place supplied by a graphic outline of the colony, from the pen of the present Governor, to be found in a despatch to the Secretary of State, and also by particulars obtained from other authentic sources. Not only has Agriculture made considerable progress in New South Wales since Mr. ATKINSON wrote on the subject, but the social condition of the Colonists has improved in other and no less important respects. At that period the number of European inhabitants of every age and class had not attained to 35,000;

it is believed now to exceed 155,000, of which, fully 80,000 have emigrated from the United Kingdom. So that in about seventeen years it has augmented more than four-fold. But, notwithstanding this extraordinary increase, perhaps unparalleled in the progress of any country, all the institutions of the colony, civil and religious, are keeping pace with the general advance of society.* During the first twenty years from its foundation, the inhabitants had to struggle for a bare subsistence, and were greatly dependent on the mother country—but now, the mere necessities of life far exceed in abundance the wants of the Colonists. They have bread, animal food, poultry, vegetables and fruits, for twice their present population, so that if means could be found for conveying to New South Wales the hard-working, but ill-requited, poor of the mother country, in numbers proportioned to the demand in the colony for their labour, they would find ample provision. It has been observed, that the population in the towns in New South Wales increases more rapidly than in other parts of the colony, particularly on the coast, owing in some degree, no doubt, to

* See Appendix, page 178.

the introduction of steam navigation, which has afforded so much assistance to the internal trade of the country. The population resident in towns, at the census of 1841, was 125 per cent. more numerous than in 1833, which illustrates a principle in the economy of Australia but imperfectly understood, namely, that dispersion leads in that country to very rapid concentration. "As population spreads into the remote interior—the true mine of colonial wealth—new townships spring up spontaneously; these again, as their inhabitants increase, contribute to a still wider penetration into 'the regions beyond;' and thus, by an easy, but vigorous system of action and reaction, diffusion and centralization are simultaneously promoted, so that by their combined operation, this splendid wilderness will be transformed into a series of domestic circles, to become hereafter large and flourishing communities. This seems to be the order in which it is designed by Providence that civilized man in this new world of spontaneous pasturage, shall 'be fruitful, and multiply, and replenish the earth, and subdue it.' "*

The sea coast of New South Wales is almost

* Mansfield's Census of New South Wales.

equal in extent to that of the maritime provinces of Spain, but the resemblance between the two countries is not confined to the mere limits which the ocean has imposed; the climate, the productions, the soil, (whether reference be had to extensive wastes of unproductive land, or to fertile and useful territory,) are similar in almost every essential particular. The shores of Spain are now the domicile of seven millions of people, and in happier times were the envied abode of far greater numbers. The Colonists of New South Wales do not as yet constitute one fiftieth part of this amount, although, as we have shown, its capacity for the reception of people is so great.

If the mother country would but worthily apply her great powers to the colonization of these shores with vigour, constancy, and purpose, how soon might she possess in Australia many hundred thousand additional colonists.

It is undoubtedly the interest of Great Britain to accelerate by every means in her power, the system here indicated, and of which it is impossible to offer more satisfactory proof, than is shown in the annexed statement of exports from the United Kingdom to Australia, as compared

with the amount of analagous shipments of goods to all parts of the world.

Year.	Total Amount of Exports to all Countries.	Average per Annum.	To Australia.	Centesi- mal Pro- portion.
	Declared Value.		Declared Value.	
	£.	£.	£.	
1831	37,164,372	40,460,754	398,471	1·07
1832	36,450,594		466,238	1·28
1833	39,667,347		558,372	1·40
1834	41,649,191		716,014	1·42
1835	47,372,270		696,345	1·32
1836	53,293,979	50,013,140	835,637	1·57
1837	42,070,744		921,568	2·19
1838	50,060,979		1,336,662	2·26
1839	53,233,580		1,679,390	3·07
1840	51,406,430		2,004,385	3·90

The town of Sydney, into which a very large portion of this commerce flows, has recently been declared a city. It now possesses an elective corporation, consisting of a mayor and assistant aldermen. Its streets are lighted with gas; and its harbour, where fifty years since it was not unusual to be entire months without witnessing the arrival or departure of a single vessel, is now usually crowded with ships freighted homewards with the produce of its rural districts and contiguous seas, or discharging the goods and wares of the mother

country, with much imported merchandize from other quarters.

The facilities of intercourse between London and Sydney are now becoming very great. Fast-sailing vessels, affording good accommodation for passengers, are in future, it is announced, to be despatched from the Thames on the first of every month, with the Post Office Mails for Sydney.

By an Act of the last Session of Parliament for the government of New South Wales, it is directed that its Legislative Council shall in future consist of thirty-six members, of whom twenty-four are to be elective, and twelve nominated by Her Majesty. The parts of the colony within the boundaries of location is to be divided into electoral districts, and to return members as here specified.

District of Port Phillip	5
County of Cumberland	2
County of Camden	1
County of Northumberland	1
County of Durham	1
County of Argyle	1
County of Bathhurst	1
Counties of Wellington, Phillip, and Roxburgh	1
Counties of Brisbane, Bligh, and Hunter	1
Counties of Westmoreland and Cook.....	1
Counties of Murray, King, and Georgiana	1

Counties of Gloucester, Macquarie, and Stanley....	1
Counties of St. Vincent and Auckland.....	1
City of Sydney	2
Town of Melbourne	1
Town of Parramatta	1

CUMBERLAND BOROUGHES.

Towns of Windsor, Richmond, Campbelltown, and Liverpool	1
--	---

NORTHUMBERLAND BOROUGHES.

Towns of East Maitland, West Maitland, and New- castle	1
---	---

Total 24

The previously existing Legislative Council, at one of its last sittings, voted money for building a House of Assembly for the reception of the new Council. This, with the Governor's residence, now almost complete, the handsome churches already built, or rising in all parts of the town, with many other public edifices, will give to Sydney an aspect superior to most European cities. The private houses are generally built of hewn stone, and have been designed in better taste than the same description of residences in England; and many of the shops are equal to those of any provincial

town. And what indeed is more creditable to the inhabitants, the safety of property is much greater, and disorderly scenes of much rarer occurrence, than in most parts of Great Britain.

AUSTRALIA.

STATISTICS of the Colony of New South Wales, shewing the increase of Agriculture, Population, and Commerce, during a period of ten years, to 1842 inclusive, extracted from the Sydney Council Papers of June 1843.

The number of Acres, exclusive of Gardens and Orchards, in Wheat, Maise, Barley, Oats, Rye, Millet, Potatoes, Tobacco,

had increased from..... 60,520 Acres to 115,660 Acres.

The Population from... 60,794 to 159,889

The value of Exports

from £394,801 to £1,067,411

Ditto Imports from ... £713,972 to £1,455,059

The quantity of Wool

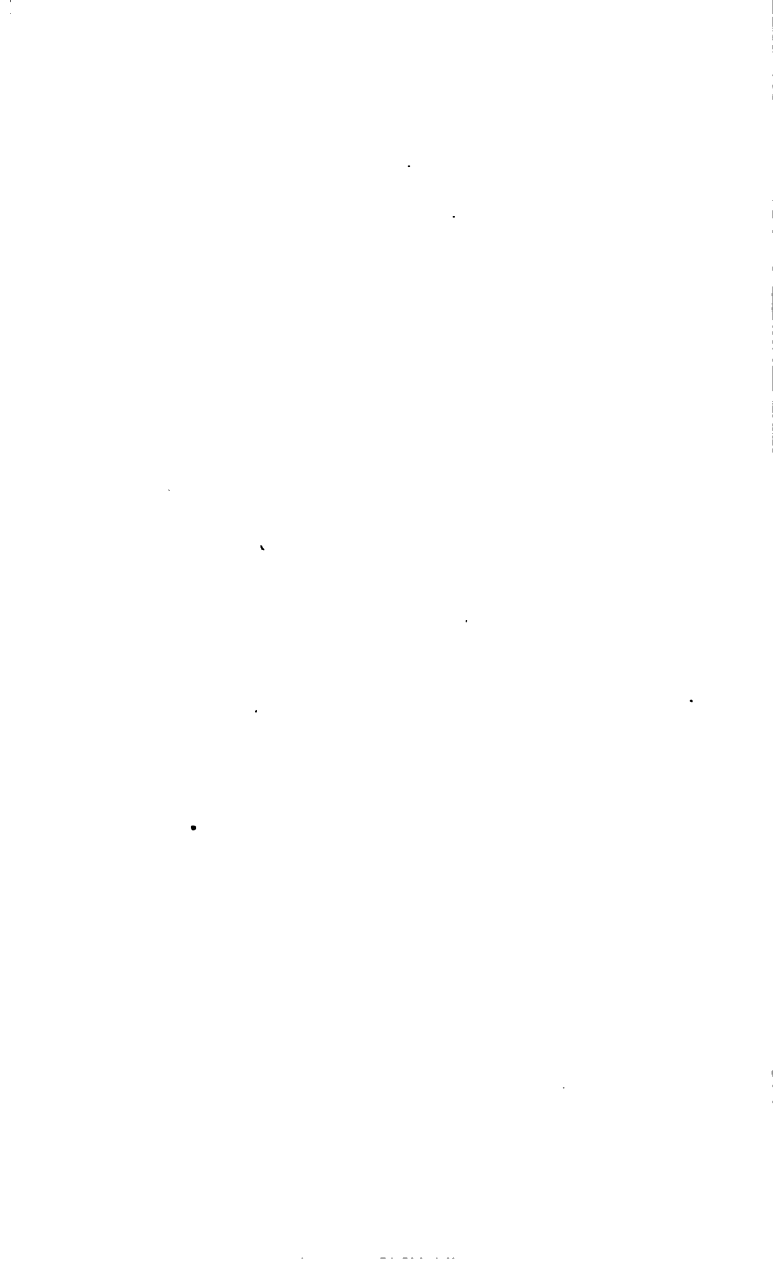
from 1,734,203 lbs. to 9,428,036 lbs.

The Shipping inwards

from 53 ships with a tonnage of 50,164

to..... 137 ships with a tonnage of 143,921 tons.

Agricultural servants, although more abundant in the Colony than they had been for years, were far from being in excess, obtaining readily £20. per annum with full subsistence of bread and meat. And the same accounts, which come down to the second week in October, represent that there never was a time since the foundation of New South Wales as a British Colony, when capital could be invested therein to so much advantage.



AN ACCOUNT
OF THE
AGRICULTURE AND GRAZING
IN
NEW SOUTH WALES.

CHAPTER I.

**GENERAL FEATURE OF THE COUNTRY, AND THE PROGRESS OF
SETTLEMENT IN THE COLONY, TAKEN FROM A DISPATCH OF
THE GOVERNOR OF NEW SOUTH WALES TO THE SECRETARY
OF STATE.**

It is well known that Australia presents a surface to the settler very different from that of any other country into which colonization by Europeans has been introduced ; that in consequence of the absence of dense forests or extensive swamps, it is pervious to the settler in almost every direction, whilst the traffic over it is further facilitated by the general dryness of its soil. In their natural state, too, the lands, though far from rich, offer very extensive pasturage, and therefore afford the means of profit to the settler, almost without the outlay of any capital. These peculiarities have, since the first occupation of the colony, led to the wide dispersion of its inhabitants ; and without seeking, on general principles, to invalidate the soundness of those theories which have

lately been propounded on the subject of colonization, and which assume as their basis the necessity of concentrating population, I think I may venture to say that they are altogether inapplicable to a country like New South Wales. Let the evils of dispersion therefore be what they may, they must here be borne with. Our flocks and herds already stray over a country 900 miles long by 300 wide; and I hesitate not to say, that any attempt to bring them within the limits even of our twenty contiguous counties, would end in failure, if not in the ruin of the colony.

Excessive droughts occasionally (perhaps periodically) occur in the country; but instead of repining under these temporary afflictions, the inhabitants ought to bear in mind, that but for their occurrence the country would not offer to the settler the advantages which it so peculiarly does. It is to the general dryness of the climate and the soil that the settlers are indebted for their chief prosperity, and they might yet have been confined to a narrow circuit around Sydney, had the character of the country been different from what it is.

Prior to my assumption of the government, (in 1838,) twenty counties had been laid out, pursuant to the general instructions given to my predecessors, under the sign manual; but these counties serve no other purpose than that of indicating certain tracts of country, as they are not conterminous with any jurisdiction either civil or ecclesiastical. It is, however, a long-established regulation of the government, that no land can be sold beyond their limits. The extreme boundaries of county

lands have come, therefore, to be called the boundaries of location; and accordingly as lands lie within or beyond those boundaries, a different system is followed in the management and civil government of them.

Within the boundaries the whole country is divided into police districts, each having a bench of petty sessions, and generally a stipendiary magistrate; and of these districts, which are of very unequal size, there are at present thirty.

Beyond the boundaries the country is also roughly divided into districts, in each of which there is a Commissioner of Crown Lands, who is the chief magistrate of it, and has under his command a small force of mounted constables, who, in order that they may be distinguished from the more regular mounted police of the colony, are called by the name of the Border Police.

Within the limits of location, land is either sold or let on lease; beyond the limits, it is neither sold nor let, but licenses are granted, at the discretion of the Crown Commissioner, for the occupation of such portions of land as may be desired by proprietors of stock, on each of which licenses a fee of 10*l.* is payable annually, and an assessment under a local ordinance (2*d* Vict., No. 27) is levied on the stock depastured there. Each allotment of land, for which a license is thus given, is called a station, and the stations may vary in extent from 5,000 to 30,000 acres.

The quantity of stock on which assessment was paid for the half-year ending the 31st December, 1839, was 7,088 horses; 371,699 horned cattle; 1,334,593 sheep; and the number of licensed stations was 694. The

real quantity of stock, however, in all probability, exceeded the quantity returned.

The rapidity with which stations are pushed into the interior is very great, and they are frequently formed without the permission or even the knowledge of the Commissioner.

Towards the north, stations already extend to the country behind Moreton Bay, 300 miles beyond the limits of location; to the south and west, they extend beyond Port Phillip, to the boundaries of South Australia. The persons who form these stations are the real discoverers of the country, and they may be said to be in Australia (what the back-woodsmen are in America) the pioneers of civilization. Wherever they find good pasturage they fix themselves, and do not become known, even to the Commissioner, until some accidental occurrence (perhaps an unfortunate collision with the aborigines) brings them under his notice, and ultimately under that of the government.

The exposure to the hostility of the aborigines is one of the greatest drawbacks to the advantages which the Australian settler enjoys in the facility of forming such stations; but of this, or the dreadful consequences which follow from it, it is not now my purpose to speak.

Another drawback is the great distance to which they are led from Sydney, and the consequent difficulty in getting the supplies of which they stand in need, and also in sending their produce, and specially their wool, to market.

The necessity of opening a shorter communication with the sea leads to the formation of new roads; and

in this way roads, or rather routes, are now being opened to the sea, from the pastoral districts which I have spoken of as lying to the north of Sydney, and behind Port Macquarie, the Clarence River, and Moreton Bay, or between the 32d and 25th degrees of south latitude. The first and last of these places have long been known, each originally having been a penal station, or place of second transportation for convicts from Sydney; but the Clarence River was only discovered about two years ago, by persons engaged in the cutting of cedar, which is usually found in the rivers on the eastern coast of Australia.

The Clarence River falls into the sea in about latitude $29^{\circ} 20'$ south; its mouth is therefore about 340 miles to the north of Sydney, and 90 miles to the south of Moreton Bay.

The Appendix (B.) contains a general report of the progress of this survey, with the necessary accompaniment of plans.

Your Lordship may observe on any map of Australia, and particularly Arrowsmith's, published in 1838, a ridge of mountains extending parallel to the sea-coast, between the latitudes of 26° and 32° . From the eastern side of this ridge various streams (of which the Clarence is the largest yet discovered) run by a short course to the Pacific; whilst from the western side of the same ridge the waters take a very circuitous course to the Darling and Murray rivers, and ultimately through a portion of South Australia to the Southern Ocean. On the summit of these mountains a considerable extent of comparatively flat or table land has obtained the name

of New England, and it is one of the best grazing districts in the colony, there being on it 66 stations.

The descent from the table land to the Pacific is steep and difficult; had it been easier, the three routes which I have mentioned to Port Macquarie,* the Clarence and Moreton Bay, would in all probability have been opened some years ago.

To the south of Sydney the same or a similar ridge presents itself, running through the counties of Cumberland, Camden, and St. Vincent, though nearer to the sea. This ridge has hitherto cut off the western parts of these counties, as well as the counties of Murray, King, Georgiana, and Argyle, from any communication with the sea, except by the way of Sydney; but I am happy to say, that a route has been discovered, which may be made practicable with little trouble or expense, from a place called Narriga, on the western side of the ridge, in the county of St. Vincent, to Jarvis Bay, which is a commodious harbour, in latitude 35°. A similar route may, it is hoped, be opened to Bateman's Bay, which lies 50 miles farther south; and another, perhaps, still further south, to Twofold Bay. At this latter place there is a very large cattle station, belonging to Dr. Imlay (formerly a surgeon in the navy), but the usual communication with it is by water.

* In 1843 a large cargo of Wool, the produce of the table land of New England, arrived at Sydney, *via* Port Macquarie. The time occupied in conveying this wool by the new road to Port Macquarie was five days. Had it gone to Maitland, the former place of embarkation, there would have been 300 miles of land carriage, instead of 80, the distance by the present route.—ED.

Further south, and veering to the west, there is a ridge of hills, marked on most recent maps as the Australian Alps, and called sometimes, in the colony, the Snowy Mountains.

In the immediate neighbourhood of Portland Bay there is but a narrow slip of good land, between which and the fertile land of the Australia Felix of Sir Thomas Mitchell, there is an intervening tract of poor country of nearly 40 miles in extent; as this latter is, however, easily traversed, there can be little doubt that the good lands will speedily be occupied, and a government establishment at Portland Bay has become therefore indispensable.

Having now spoken of the whole of the line of sea-coast, and of the country bordering on it, from Moreton Bay to the confines of South Australia, it remains for me to speak only of the interior.

Wheresoever a river presents itself running to the westward, the course of it is marked by stations; and this is particularly the case on the Namoi, the Macquarie, and the Lachlan, on the borders of each of which they extend, perhaps, to a distance of from 200 to 300 miles beyond the limits of location; but as every step in this direction leads the settler farther from the sea, as well as from Sydney, the limit seems, in the opinion of some people, to be attained beyond which the feeding of sheep will cease to be a profitable employment, the wool not bearing the expense of transport from a more distant country. Horses and horned cattle may, however, still be reared to advantage at more remote stations, as

they may of course be driven, when of proper age, to a market, however distant.

Along the whole of the road from Sydney to Port Phillip, villages have been laid out and police stations formed by the government. This road is therefore now as safe and as easily traversed as any other in the colony; indeed it may be mentioned as a proof of the open and accessible character of the country generally, that this road, or at least the portion of it which lies between Yass and Melbourne, about 380 miles in extent, has been opened at no cost whatsoever to the government, and very little to individuals; and that it is not only practicable but easy throughout its whole length for carriages of any description.

Sydney, 31st December, 1841.

The Australian Alps referred to in the preceding account, are situated in the recently discovered district of Gipps' Land. This district lying between Cape Howe and Wilson's Promontory on the south, is described by Count Streleski as possessing an extent of 5,600 square miles of excellent land, with 250 miles of sea-coast, two already-known harbours, that of Corner Inlet and Western Port, besides others for small craft, which more than probably exist where its rivers discharge themselves into the sea. In addition to a navigable lake and lagoons of more than 100 miles in length, eight rivers fertilize the territory. There are 3,600 square miles of forest plains and valleys, which in richness of soil, pasturage, and situation cannot be surpassed. On the coast

range, 2,000 square miles are covered with blue gum tree and black butt of excellent quality; the valleys are large and deep, and hold out high expectations for cattle breeding. The natives are peaceable and inoffensive, and present no impediment to colonization.*

In another parliamentary paper,† this district is said to be bounded to the northward and westward, and south west, by the Australian Alps, the summits of which are covered with snow. These mountains give rise to six considerable streams, or rather rivers, each of them navigable from 10 to 15 miles from a large navigable lake of fresh water, called Lake Victoria. In seasons, however dry, these streams run perpetually, in consequence of the melting of the snow on the mountains. Supplies are conveyed by sea to settlers in this district from Sydney and Melbourne. Vessels drawing from eleven to twelve feet can enter at low water, and at high water perhaps a vessel of any size would find a safe entrance. On the banks of the rivers, the alluvial soil is of great depth, with neither tree nor stone on it, and immediately fit for the plough without any expense of clearing. Add to this, there is in the neighbourhood abundance of brush land of the richest description. It readily produces wheat, oats, barley, rye, potatoes, clover, lucerne and other artificial grasses; with turnips and every vegetable grown in England. European fruits may be grown there with advantage. Sydney would

* Report by Count Streleski. House of Commons, No. 120, 1841, page 15.

† House of Commons, No. 109, 1843, page 137.

afford a market for its grain, as Van Diemen's Land now does for its surplus stock. The country is admirably calculated for dairy farms, the sward and natural pastures being extremely rich, and the milk of cattle fed on them affording an unusual quantity of butter. The country is full of game, kangaroos, emues, wild turkeys, geese, and other water fowl. There is also abundance of fish in the lake and harbour.

The following observations, derived from a paper read by Colonel Gawler before the Geographical Society, apply generally to the east coast of Australia, with the exception of that portion of it described by Count Streleski, which may be considered to extend from Corner Inlet to Illawarra almost without interruption.

The country may be described under the following distinct divisions, namely: the sand deposits along the sea shore—the brush and scrub—the stringy bark forest—and the lightly-timbered park-like land available for tillage, and for cattle and sheep pasturage.

The brush and scrub country consists of tracts of stunted foliage (in the case of the scrub, being mere bushes,) over which a man on foot may have a distant view; and in that of the brush, being trees of various heights, from twenty to twenty-five feet. The scrub perhaps might never be useful, but the brush might certainly become very serviceable in all purposes in which long and straight poles are required. It would burn into good charcoal, and form an endless supply of fuel for smelting the iron ore with which the country abounded. The brush was also very beautiful, consisting of acacias, eucalypti, and high creepers, flowering

luxuriantly. The brush and scrub are almost invariably found on sandstone formations. The geology and botany of Australia run singularly together.

The stringy bark forest is an extensive, noble, and most useful feature in many parts of the country. It follows the courses of the summits of the mountain ranges, and stands almost invariably upon the quartz and ironstone conglomerate, by which these ranges are generally capped. These forests consist of noble trees, straight and lofty, the wood of which serves admirably for house building purposes, and for fences of all kinds.

The lightly-timbered park-like country rests upon alluvial deposits, the decomposition of the forests and rocks of the mountain ranges, or it covers the extensive slate formations incumbent on the sides of the mountains, or the very extensive and nearly horizontal stratified fossiliferous formations at the basis of the plains. It is beautiful, and most available for the wants of man. In it are to be found large tracts fit for the plough, and for every species of cultivation; extensive horse and cattle pasturages, and very extensive sheep walks. It is lightly covered with eucalypti, the oak, (*Casuariana*), and other trees, of which the wood is calculated for very useful purposes, as is well known in the colony.

The high lands are the sources of numerous small rivers, which descending from the mountain ranges, form lovely valleys at considerable elevations, and then descending to the plains, through wild rocks and almost impassable ravines, cut deep and broad channels in their further courses to the sea. A number of small rivers, having short courses from their source to the ocean,

water the sea board from Corner Inlet to Illawarra, and, as is frequently the case in other countries under the same latitude, these streams are often reduced to mere chains of ponds. Shallowness and want of beauty must not be connected with the idea of them, but the contrary. They are deep and frequently very large, being often upwards of a mile in length, and their banks clothed with magnificent trees, supporting gigantic climbers, and giving to the scenery all the luxuriance of the tropics.

So much for the southern districts lying intermediate between Sydney and Port Phillip. With respect to the country north of Sydney, and extending from the county of Macquarie to Moreton Bay, is said to possess a climate, soil and surface as varied as it is excellent. The fine herbage and salubrious climate of the table lands, calculating their range from the thirty-second to the twenty-sixth parallel, are in an eminent degree suitable for the breeding of merino sheep. From the wheat-producing latitude of the county of Macquarie, to the sugar-growing climate of Moreton Bay, the soil and climate are peculiarly adapted for the cultivation of wheat, and every other genus of the ceralia, and for the production in the highest perfection of sugar, coffee, cotton, silk, flax, hemp, fruits, and tobacco, as well as for wine, brandy, olive oil, opium, indigo, and every other European and tropical article of culture, including even tea. Notwithstanding these great advantages, the inhabitants of these districts as yet import butter, cheese, candles, soap, and leather from London, Liverpool, and Sydney. Its agricultural capabilities are

boundless, yet flour from America, maize, meal, tobacco, hay and straw from Sydney, and potatoes from Wallongong still continue to be imported. And why are the inhabitants thus dependent upon other districts and other countries for all the necessaries of life, animal food almost alone excepted? Simply, because they have been so stinted in the supply of agricultural servants from the United Kingdom, that the utmost difficulties have been experienced in obtaining shepherds for their flocks.

A region possessing such varied producing powers as are here described, were the influx of labourers sufficient for its wants, ought rapidly to create capital, and instead of expending that capital in foreign luxuries, purchase with it such wares as Leeds, Manchester, Birmingham, and Sheffield can amply provide.

At Moreton Bay there are about forty-five sheep or cattle stations, none of which have been permitted to approach within fifty miles of the town of Brisbane, the chief place of the district. In 1842, as many as 1,800 bales of wool, the produce of these stations, were shipped there.

Whenever the Home Government shall see the policy of carrying on emigration from the United Kingdom to such an extent that the population of New South Wales shall bear a just proportion to the means of subsistence in the colony, and the demand there for labourers, Moreton Bay will become a place of great importance.

Thirteen acres and a half of building ground at Brisbane were sold by order of Government in 1842, and produced £4,637. 10s., being at the rate of £343. 10s. per acre.

CHAPTER II.

TOPOGRAPHY.—FOREST LANDS.—PLAINS.—ALLUVIAL SOILS.—
SCRUBS.—BRUSHES.—RIVERS AND WATER.

THE various descriptions of country in New South Wales may be classed under the following heads: *viz.* forest lands, plains, alluvial soils, scrubs, and coppices or brushes: in describing which it will be necessary, in some cases, to make a further subdivision.

Forest lands are variously designated according to the quality of the soil, or the nature and number of the trees growing thereon, such as good, poor, open, or thick forest. It is, however, always to be understood, that forest means land more or less furnished with timber trees, and invariably covered with grass underneath, and destitute of underwood. Under the head of forest lands are included some of the best and most improvable soils in the colony; they are generally either clay or loam, of various degrees of tenacity, with a layer of vegetable earth on the top, extremely well calculated for the growth of grain. In the county of Cumberland, one immense tract of forest land extends, with little interruption, from below Windsor, on the Hawkesbury, to Appin, a distance of fifty miles; large portions of this are cleared and under cultivation, and of the remainder

that is still in a state of nature, a great part is capable of profitable cultivation. The whole of this tract, and indeed all the forest in this country, was thick forest land, covered with very heavy timber, chiefly iron and stringy bark, box, blue and other gums, and mahogany.

The quality of the forest lands, and indeed of most others, will be found to be governed by the nature of the rocks and stones that form the basis of the soils; thus, in this tract of forest, in the county of Cumberland, the rocks are either common or calcareous sandstone, ironstone, and in some few places whinstone; these form soils of various degrees of goodness, the whinstone generally the best. In some places small pebbles of ironstone, not larger than peas, may be found, scattered over the surface; this, wherever it occurs, is a sure sign of a poor hungry soil.

In the country westward of the Blue Mountains, and also in the counties of Argyle and Antrim, are large tracts of open forest, where the basis of the soil is granite; this country is thinly covered with trees, of the white and blue gum kinds, and large blocks of granite, of a coarse texture, and grey colour, are seen lying about the surface. This country, though pleasing to the eye, having a beautiful park-like appearance, is poor, and seldom adapted for cultivation; but the soil is light, dry, and extremely well suited for sheep grazing, the surface being covered with a thin but very nutritive herbage. In the county of Argyle are some small tracts, where whinstone predominates; this is the finest description of forest land in the country, equally well adapted for grazing or for cultivation; the soil is firm

and rich, and the herbage of the most nutritive description.

Extensive plains are a distinguishing feature in the interior districts of New South Wales. These tracts, although termed plains in the colony, are very seldom level, but generally a gentle undulating surface, destitute of timber, and covered with grass; they extend, with many interruptions, but still forming one great chain, from Liverpool Plains, on the confines of the county of Brisbane, to Monero Plains, to the southward of Lake George, approaching nearer to the sea coast as they extend to the southward; many large portions of this immense tract are occupied in grazing by persons holding tickets of occupation, for which purpose, especially for sheep grazing, it is extremely well adapted, being covered with fine grass and herbage, and generally well watered; very little of this immense tract of open country has as yet been sold by government. The silence and solitude that reign in these wide-spreading untenanted wastes, are indescribable, and must have been witnessed to enable any one to form a proper conception of them; no traces of the works or even the existence of man are here to be met with, except perhaps the ashes of a fire on the banks of some river. The plain affording little or nothing for the subsistence of the savage, is wholly abandoned or but seldom crossed by him; the kangaroos even shun the place, preferring the shade and shelter furnished by the forests; and nothing meets the eye of the traveller, with the exception of a few solitary emus, to enliven the monotony of the dreary expanse. From the contemplation of this

vacancy and solitude the mind recoils with weariness, and naturally turns with pleasure to anticipate some future, yet not distant period, when these vast and in many places fertile plains, shall be covered by productive flocks and herds, and enlivened by the presence and industry of civilized man. The soil in these plains is of various qualities, according to the nature of the rock which forms the basis ; in some places limestone prevails, and occasionally forms a good soil ; in others whinstone, which is much better ; in others granite, with fragments of white quartz strewed upon the surface, in these places the soil is weak and hungry, but dry and well adapted for sheep grazing, being covered with a sweet although thin herbage.

The alluvial lands in New South Wales are not surpassed in fertility by any in the world ; those of the Hawkesbury and Nepean were first discovered, and are still the best known, from their proximity to Sydney, but the alluvial lands of the more northern rivers are of much greater extent and fertility ; they consist of vegetable mould more or less mixed with sand of many feet in depth. In some places the soil, by continual augmentation, has risen above the level of the floods, which has been further aided by the rivers having deepened their own channels, so that many spots formerly flooded are now exempt from that visitation : the greater part of the alluvial lands, however, still remain subject to inundation, and all the liability to loss of crops and other calamities consequent thereon. These floods are much augmented, and the rapid rise of the waters accelerated, by large quantities of timber and still living

trees, that have either fallen in accidentally, by the banks whereon they stood being gradually undermined by the water, or have been thrown in designedly by the indolent settlers in clearing the land, rather than take the trouble of burning them : whenever a tree falls or is thrown into the bed of a river in this manner, a sand-bank is immediately formed, and thus the channel becomes choaked up, and the free passage of the water prevented. It is believed by many intelligent persons, that were each Proprietor compelled to clear his own frontage, or some other means adopted to remove these obstructions, so that the water, during the time of its rising, when floods occur, might pass off with ease and rapidity, very few floods would rise so high as to overflow the banks. It is probable, that were these fallen trees removed, some small parts of the present banks might fall in, as the rivers would naturally work their channels both wider and deeper ; but any trifling loss to individuals of this kind would be amply repaid by the advantage that would arise from such a quantity of fertile lands being exempted, in a great measure, from such destructive visitations as these inundations.

The greater part of the alluvial lands upon the Hawkesbury and Nepean have been cleared, and are under cultivation ; and under good management produce most abundant crops, as is sufficiently exemplified on the farms of a few individuals where a good system is practised. The soil and climate are admirably fitted for the growth of tobacco, and many other valuable productions. The land is easily wrought, little or no manure is necessary, and the whole attention of the farmer may

be directed to cropping his land in a proper manner, and keeping it free from weeds. Most of these alluvial lands were originally forest; the timber was large, principally blue and flooded gum, with an abundance of the tree known in the colony by the appellation of the apple tree, which is of very little value. There are many flat pieces of land in the neighbourhood of the rivers, that in the time of floods are covered with what is termed *back water*; there is no current over these places, and the mud and vegetable matters contained in the water are deposited here in great quantities. This land is very rich and fertile, well calculated for agricultural purposes, but containing little sand, is a very stiff strong soil, and of heavy tillage. The whole of such alluvial lands would make most excellent permanent pastures, if laid down with *proper* grasses; and as fatting pastures would yield a greater profit than in cultivation, as the crops would be less liable to be carried away or damaged by the inundations. They have been found by experience to be sound healthy pasture for cattle, if not sheep.

In the early days of the settlement, the colony was almost wholly dependent upon these alluvial lands of the Hawkesbury for its supply of grain; an inundation was often followed by a scarcity, sometimes amounting to a famine. Cultivation, however, has since principally extended on the forest lands, and these inundations, though still disastrous to the occupiers of the banks, are of less importance to the general prosperity of the colony. It is, however, to be hoped, that the greater part of these lands will before long be con-

verted into fattening pastures, or should that not be found to answer, into hay fields.

Although the annual quantity of rain in New South Wales is greater than in England, the greater evaporation causes a deficiency of running streams in most parts of the colony. It rarely however occurs, that water becomes so scarce as to cause any distress among the cattle and sheep. Such instances of distress have, however, been known in some of the inland districts.

The barren scrubs almost every where border the sea coast, and extend to various distances inland; in some places two or three miles; in others, lands of a better description approach close to the water's edge. The soil in these scrubs is either sandstone rock or sterile sand or gravel, covered, however, with a profusion of beautiful shrubs, and often producing most lovely flowers, and affording a constant succession throughout the whole year, but most abundant in winter and spring. The shrubs and plants growing in these places furnish the colonists with materials for brooms, but produce little else that can be converted to any useful purpose.

The grass tree, with its tall flower stalk, is a conspicuous object in these wastes; of the hard and woody but light stalk of this plant the natives make the shaft of their spears, or fish gigs. Few trees grow in these places, except here and there stunted gum trees, in situations sheltered from the sea winds. Much honey might probably be collected from these scrubs, were bees plentiful in the colony, and some small profit may possibly be thus made of them hereafter; but with this exception, they scarcely seem susceptible of any im-

provement. Scrubs of this description are also found in places on the summits of the Blue Mountains, and other high and exposed situations in the interior, producing nearly the same shrubs and plants as on the sea coast.

Brushes may principally be divided into coppice, vine, willow, and indigo brushes. The first kind I have called coppice brushes, as they approach nearer to the nature of coppices in England than any other kind of woods in the colony. They are not, however, known by that name in the colony, but are distinguished into iron bark brush, stringy bark brush, &c. according to the kind of tree that predominates in them.—These brushes are found principally in the tract of country included between the sea and the mountains which separate the waters falling into the sea on the eastern coast, from the interior rivers; and also about the sides and upon the summits of those mountains. They are generally thickest and most extensive towards the sea: there are, however, some large tracts of brush at some distance in the interior, such as Bargo Brush, in the county of Camden, and Wombat Brush, in the county of Argyle. Brushes of this description are principally composed of lofty stringy bark and iron bark trees, thickly set beneath with underwood, composed of several varieties of mimosa, young trees of the kinds already mentioned, and many others. The soil, in places, is very good, consisting of a light vegetable mould upon a clay or loam; it is very light tillage when once properly cleared, and is well calculated for the production of potatoes and grain crops; but the

expense of clearing is so great, that unless in the immediate vicinity of a market, or upon a leading road, or thoroughfare, the return to be expected will not warrant the outlay. The principal part, however, of the lands of this description, are very indifferent, and in many places wretchedly poor, consisting of a sterile clay or gravel, and wholly useless.

Vine brushes are mostly found on the sides and summits of steep mountains near the sea. It is here we may see the vegetable kingdom in its most magnificent form, lofty cedar and turpentine trees of the grandest dimensions, with large vines or parasitical plants of various kinds, as thick as a man's leg, twining up to their very tops, catching hold of other trees in all directions, until an immense net-work is formed, impervious to the sun's rays. Here are found the elegant sassafras or kalang; the bark of this tree has a spicy aromatic taste, and is much esteemed in the colony as a stomachic and purifier of the blood; and the whitewood or boula tree, with its dark green foliage and smooth bark, resembling the beech of Europe. The cabbage tree, with its slender stem, rising to sixty or seventy feet high, and circular head, is a conspicuous object in these shades, and is generally found growing wherever any rills of water run down the sides of the mountains; of the centre leaves of this tree the colonists make very durable hats, split and plaited like chip or straw. Here, also, is seen the fern tree, a very beautiful vegetable production: its stem is about eight feet high and two feet in circumference; the leaves are about three or four feet long, branching out from the top of the stem in a

very elegant manner. There are many other beautiful plants and trees produced by the perpetual moisture of these brushes, and the complete shelter formed by their impenetrable covering. In some places these kind of brushes extend into the low lands, and accompany the mountain streams to the nearest river, or to the sea ; to their other productions are then generally added the bangally, much resembling the cabbage tree in appearance, but having some long and wide leaves of a thick and tenacious texture; these the natives tie up at each end in the form of a boat, and use for carrying water and other purposes. In these lower situations is found the nettle tree, a very singular plant, about twenty or thirty feet high ; the bark is nearly white, the leaves are heart-shaped and large, of a pale green, and jagged at the edges ; these leaves, if unwarily handled, inflict a sting infinitely more painful than the nettle of Europe.

The soil in many of these brushes is extremely rich, but the labour of clearing is immense ; and very little land of this description has been hitherto brought into cultivation ; it seems, however, well adapted for the production of vines and other fruits, being generally of a light friable texture, and lying in peculiarly warm sheltered situations.

In willow brushes the ground is more or less covered with the white or woolly gum trees, and underneath thickly covered with what is termed in the colony willow brush, growing to the height of two or three feet ; many of these brushes are very good land, being a light sandy loam, and very fertile ; they are, with proper management, well adapted for the growth of barley.

This kind of country affords good grazing; the grass growing very freely among the brush, which protects it from the frosts, and these places therefore afford the best winter keep for stock. This shrub is frequently eaten by cattle, especially by horses; it affords a very pleasant bitter, and might perhaps be advantageously employed in brewing, as a substitute for hops.

Indigo brushes are not very common; the timber in these is generally white or blackbutted gum; the ground beneath is covered with the native indigo, a very beautiful plant, with a light purple flower. Horned stock are extremely fond of this plant, and in winter, when the grass in the more open situations is withered by frost, they delight to feed in these brushes, which afford at once food and warm shelter. The soil in these places is mostly a light free loam, very fertile, and well fitted for agricultural purposes.

CHAPTER III.

NATURAL PRODUCTIONS.—TREES.—SHRUBS.—GRASSES.—FOSSILS
AND MINERALS.—QUADRUPEDES.—FISH.—BIRDS.—REPTILES.
—INSECTS.

To describe the natural productions of this vast Continent in a complete and satisfactory manner, would be utterly impossible in a work of the limited nature of the present; and, besides, would require a degree of botanical and other scientific knowledge, to which the Author makes not the smallest pretension. The brief sketch here presented, therefore, will be principally confined to those objects which either are or may be capable of being converted to useful purposes.

The timber of every uncultivated country forms a very important part of its spontaneous produce, and is generally the first article that can be made available to the domestic wants or foreign commerce of the early settlers. Yet so difficult is it to prevail on ship-builders to make use of any new species of wood, and so great is the force of prejudice amongst men of this class, in favour of English oak and other kinds that have been in use for ages, that for several years succeeding the settlement of the colony, the timber of New Holland

was believed to be of a very inferior description, and wholly unfit for ship-building. Many specimens were at different times sent home, and uniformly rejected, and pronounced worthless by our builders. It is true many of these specimens were injudiciously selected, there being few persons in the colony competent to form any correct opinion on the subject. Experience has now, however, fully demonstrated that it possesses several kinds of timber very useful and durable, the best proof of which is, that they have lately become a considerable and increasing article of export, and several cargoes have been sold in London, at prices that have fully remunerated the Merchants for their expenses in importing them. Little or none as yet has, however, found its way into our naval yards, sharing in this respect the fate of teak and other woods, confessedly superior to English oak.

I shall here endeavour to give a list of the most common woods of the colony, and the uses to which they are applied, as far as the extent of my observation and humble abilities will allow.

Rose Wood.—Found principally at Port Macquarie, and Hunter's River. The trees are large, and generally sound quite to the heart; the grain is close and fine, and the texture and appearance when worked extremely beautiful, resembling the best mahogany. This wood is much used by Cabinet-makers, and makes very excellent furniture; it also makes very good shells for blocks, not being liable to split.

Cedar.—Found principally at Port Macquarie, Hunter's River, and the district of Illawarra. Its grain is

not so compact as rose-wood, but it still makes good furniture. Hunter's River cedar is most esteemed, the texture being very fine and beautiful; in colour it resembles Honduras mahogany. It works readily when fresh cut, shrinks greatly, hardens by exposure, and when dry is very light. It is much used for doors, window frames, and wainscoting in houses; and also makes good board for boat building, and useful pannels, frames, &c. for gigs or other light vehicles.

Coal River Pine.—Found at Hunter's River; is not much used, but seems more of the nature of ash than any other European tree.

Moreton Bay Pine.—A valuable timber, almost equal to the New Zealand Kauri. The trees grow in every part of the Moreton Bay district, and might supply the whole of the pine timber used in the colony. The plant is very slender in proportion to its height. One which had a hundred and fifty annual rings, was but two feet diameter, although a hundred and seventy feet high. The wood splits well and is used by the northern settlers for all purposes.

Blue Gum.—This is perhaps the most generally useful of all the Australian woods. The grain is close and compact, the timber heavy, and of a red colour. It is found almost every where, but of the largest dimensions, and most abundant, near the sea coast. Large quantities of it have been exported to England in the shape of plank, and its merits have been duly appreciated in the London market. It is extensively used in the colony in ship and boat-building, and has been found very lasting and durable. The smaller sticks make

good lower masts, yards, and booms, being extremely tough. It is used in house-building for beams and flooring boards, and also by turners in common articles of furniture. It makes good posts for fences, resisting the alternations of wet and dry better than any other wood. It splits well, and saws easily when green, but gets extremely hard when seasoned. It is bent into hoops for the tilts of waggons and carts. In the county of Argyle this tree grows smaller, and seldom splits well, but is very sound, and useful for sawing.

Black-buttèd Gum.—Grows mostly in low lands near the sea coast; is a very large tree, and probably next to the blue gum in usefulness; the grain is not so compact, and the wood is of a brown colour.

Flooded or Water Gum.—Is found in low situations, like the last variety, which it much resembles in quality; both kinds are much used in house-building. These trees are among the tallest in the world; they may often be seen upwards of two hundred feet high. Like most of the Eucalyptus family, these trees generally produce very few branches, and those few of very small size, even at the top, a circumstance which, although it may not add to their beauty, enhances the value as timber trees.

Spotted Gum.—Found in abundance about Shoal Haven and Jervis's Bay. Is remarkable for its lofty straight stems, with a grey bark, spotted with white; it has not been much used, and is probably an inferior variety.

White Gum.—Is found in the county of Argyle, and other places westward of the Blue Mountains. It is a

tough wood, very fit for wheelwright's work, but the grain is not compact, and it is probably not very durable; when free of gum veins, to which it is very liable, it makes good flooring and weather boards, being of a good white colour.

Red Gum.—Grows principally about the sea coast, is very full of gum veins, and when tapped yields an immense quantity of a dark extractive matter, highly astringent; it is esteemed an inferior variety.

Woolly Gum.—Found in the county of Argyle, and country to the southward. Has a low trunk with wide spreading branches, and more foliage than the generality of Australian trees. The wood is very inferior, of a coarse texture, and not durable. These trees are more like those of Europe than any other species of Eucalyptus. They are often feathered with branches down to the ground like well-grown trees in an English park. Their rapidity of growth renders them valuable for ornamental purposes: at Camden, Mr. William Macarthur planted five of these trees, of which the largest, after twelve years' growth, was about fifty feet high and two and a half feet diameter, at about a yard from the ground; this plant, which would be a tolerably large tree in England, must be considered as quite an infant, as it has not yet seeded.

Box.—This is a very useful wood, of a firm compact texture, tough and durable. The trees are handsome and well grown, the bark is strong and close, possessing much of the tanning principle, and is very useful in constructing huts and temporary buildings; this tree abounds in all the forest lands in the county of Cumber-

land and Cow Pasture district; and is much used for boards and joists in house-building, and also in wheelwright's work.

Iron Bark.—Is a tall straight tree, with a small top, and scanty foliage; the bark is extremely rough, of a dark colour, and very hard, from whence it derives its name. The wood of this tree is of a dark red colour, very hard and heavy; it splits readily, and makes excellent shingles for the roofs of buildings and capital rails for fences. It would make treenails for ship-building; would be useful in millwork, or any other purpose where strength and durability are required. This tree abounds in the county of Cumberland, and many other parts of the colony.

Stringy Bark.—This tree is perhaps the most useful to the colonists of any in the country. The wood is of a good quality, of a brown colour, splits and saws well, not much subject to gum veins; is very much used in building and wheelwright's work, and in fencing and paling. It is found diffused in all parts of the colony; the bark is much used to construct huts and temporary buildings, being of a fibrous, tenacious texture, and parts readily from the wood; the inner bark is frequently twisted into ropes for many temporary uses.

Turpentine.—Is very conspicuous from its peculiar dark green foliage; is found almost everywhere near the sea coast, but not in great plenty. The wood is of a brown colour, and good tough quality. Is frequently used in building; and makes good oars and handspikes.

Mahogany.—A tree resembling the stringy bark, but not so rough coated. The wood is of a dark red colour,

hard and heavy ; much used in building, and also by turners, for bed posts and other articles of common household furniture.

Sassafras or Kalang.—This is a beautiful tree found in vine brushes near the coast. The bark, as already mentioned, is aromatic, and used medicinally in the shape of a decoction. The wood is white and very light, but I am not aware that it has been applied to any useful purpose.

Whitewood or Boula.—Found in the same situation as the last. The wood is white, but heavier than sassafras, but like it, I believe, its qualities have not been tried.

Forest Oak.—This tree in outward appearance much resembles the Scotch fir. The wood is well known in England by the names of Botany Bay wood, or beef wood. The grain is very peculiar, but the wood is thought very little of in the colony ; it makes good shingles, splits, in the colonial phrase, from heart to bark ; these shingles are not near so durable as iron bark, but possess the advantage that they may be nailed on without boring with a gimblet. Is found almost every where.

Swamp Oak.—Much resembles the last ; grows in wet places, and along the sides and in the beds of rivers and streams. Is also used for shingles.

Red Honeysuckle.—A low tree, found about the sea coast. The wood of this tree is of a close short texture ; and much used for timbers of small vessels ; and makes excellent naves for wheels. The ashes yield a considerable quantity of pot ash for the soap-boilers.

White Honeysuckle.—Found in various parts of the interior. It much resembles the red. The wood makes good shoemaker's lasts.

Myrtle.—This is a shrub growing about the rocky banks of creeks and rivers in various places; it reaches the height of twenty or thirty feet, but does not assume the form of a tree, growing clustered together in the nature of underwood. The wood is very compact, tough, and heavy; bends readily when green, but gets very hard when seasoned: makes excellent swingels for thrashing flails, and is used by the natives for their clubs or waddies.

Light Wood.—A small tree found in the county of Argyle and other places; makes good axe helves, being tough and light.

Black and Green Wattle.—Are very common every where. The bark of the black wattle contains a large proportion of tanning, and is much used by the tanners of the colony. In the shape of solid coagulated extract, obtained by boiling the bark, it has been sent to England, and used with success. The young saplings of these trees, cut and seasoned, make excellent handles for pitch forks and rakes; the old wood, when of curly growth, makes good heads for mauls.

Currajong.—Is found in many parts, but not very plentiful; the inner bark of this tree, beat and twisted, forms ropes nearly equal in strength to Manilla coir.

Flindersia Australis, called at Moreton Bay, *Yellow Wood*.—Is a fine tree, producing a timber well suited for cabinet work; its texture is closer and its weight greater than those of the common cedar, to which tree it is

botanically allied. It is strange that this wood is not used in the colony for ornamental purposes, as it is so much harder than cedar, and from its greater hardness is not so liable to be injured.

Moreton Bay Pine—Arancaria Cunninghamiana.—The wood of this tree is used at Moreton Bay for boards, split rails and other purposes. It is brought to Sydney and sold under the name of Clarence River Pine, has a good reputation with builders at Sydney, and is doubtless equal to any imported pine timber; its grain is very fine, and the colour and general appearance of the wood is that of the New Zealand Kauri. This tree grows in great abundance on all the alluvial brush lands and steep sides of hills in the county of Brisbane. Enough of this timber might be cut to supply the whole of Australia, if labour was a little cheaper than it is at present.

This arancaria is probably the slenderest of its gigantic family: the Norfolk Island Pine has been seen two hundred and seventy feet high and twelve feet diameter, but this tree is rarely found more than three and a half feet diameter; it is very tall in proportion to the size of its trunk and branches. One of these trees, which had been cut for splitting, measured across the stump exactly two feet; the section shewed it to be a hundred and fifty years old, if the concentric circles really indicate the age; the height was a hundred and seventy-five feet, yet the largest branch was not thicker than a man's arm, and only about six feet long. Although beautiful in the gardens of Sydney, these trees are exceedingly ugly in their native woods, and do not pre-

sent any of the symmetrical outline which renders the other arancarias so remarkable, and which even in this plant is sufficiently evident during its youth.

The above are the principal Australian trees; there are some others distinguished by the colonists by the names of bastard iron barks, bastard box, bastard stringy barks, gum box, &c. but they differ but little from the kinds from whence they derive their names.

Much care is requisite in seasoning wood in the colony, especially in spring and autumn; any long continued exposure to the sun at those seasons, when they contain most sap, causes such a rapid evaporation of the juices, and such a quick contraction of the vascular system of the timber, that the wood is apt to cone and cast extremely. I have found it the best way to cause the timber to be sawn, for the purpose intended, as soon as felled, and then to immerse the board, &c. in water for at least six months; the juices are thus gradually drawn off, and the vessels contracted; it may then be taken out and dried, but should not be too suddenly exposed to the full influence of the sun and air.

The greater part of the full-grown trees are decayed at the heart; and the best timber is found to be, if not exactly the sap, at least the newly-formed spine. The first specimens sent home were squared logs; the hearts of these being decayed, caused them to be rejected by the ship-builders. The late exportations have all been made in sawn plank, of various thicknesses; none but the prime wood has thus been sent to market, and the prices obtained have shewn the plan to be judicious.

No very certain inference of the quality of the soil can be drawn from the species of timber found growing upon it.—The iron bark, stringy bark, and spotted gum, generally grow in poor gravelly land. The box, blue and white gums, grow in good clay or loam; swamp oak abounds where the land is wet, cold, and generally poor. With the exception of alluvial land, good timber is very seldom found upon good land. The fertile plains in the interior are wholly destitute of it. The best whinstone forest lands in the county of Argyle are very thin of timber, and the trees are small, stunted, and useless, except for firewood. In the county of Cumberland, the best forest lands are invariably thinnest of trees; and in general it will be found the best lands are least encumbered with timber; this, however, does not hold good of granitic soils, which are generally open and free of timber, and sandy weak land.

Very few of the shrubs have as yet been converted to any beneficial purpose; many of them might probably afford useful materials in the arts, and also in medicine. The excellent and indefatigable King's botanist, Mr. Cunningham,* has, I believe, pointed out many to medical gentlemen, which he imagined might be possessed of particular properties; but no person has yet been found possessed of sufficient science or inclination to make any experiments on them. A plant, resembling a sallow, growing about the sides of rivers, furnishes good materials for basket-making, though not equal to

* In the death of this gentleman, the colony has to regret the loss of a most useful public servant.

osiers. The wood of the warrataw or native tulip, the most magnificent flower of New Holland, has also been applied to the same purpose. At certain seasons of the year, the dwarf honeysuckle, which is very abundant in barren scrubs and brushes, yields an immense quantity of beautiful transparent honey ; it is found standing in large drops among the filaments of the flower cone, and might be easily collected by simply pressing the cones in a jelly bag. There are few indigenous fruits worth mentioning : the native cherry, five corners, jibbong, and others, are mere tasteless berries, eaten by children as haws are in England. The native currant is a fine pleasant acid, resembling the cranberry ; it makes a very agreeable preserve with plenty of sugar. The burwan is a plant with leaves very much like the cocoa nut, growing out from a stem about a foot high ; at certain seasons it produces a flower, which is succeeded by a cluster of nuts, enclosed in a hard woody shell ; this nut in its raw state is a poison ; the natives, however, convert it into a very pleasant and nutritive article of food. They first roast the nuts in the ashes of their fire for a short time ; then crack them between two stones, separating the kernels and breaking them up ; they then roll up a piece of bark in the form of a tube, and placing some grass or other substance to prevent their escape, immerse them in a running stream for twelve hours ; they are then good and wholesome food, tasting much like roasted chesnuts. The burwan is found in great plenty in the scrubs and poor forest lands near the sea coast.

The grasses and wild herbage form a most important

part of the spontaneous productions of New South Wales; and, in this respect, the colony justly claims precedence over many uncultivated countries; since, by their aid alone, grazing and breeding live stock have been carried to an extent that is really astonishing.

The principal grasses are, the oat grass, kangaroo grass, two sorts of rye grass, a variety of the fiorin, timothy, &c. Of these, the oat grass is the most generally diffused; it affords good pasturage, and is eaten by all kinds of stock, but does not stand the winter. The kangaroo grass is found in low and warm places near the coast; it grows with an upright stalk to the height of eighteen inches or two feet, has a few blades at the top, of a fine green, but is destitute of leaves at the bottom; it is relished by horned cattle, but does not feed horses or sheep well, being probably too succulent, and those animals delighting most in a short close bite. The other descriptions of grass above mentioned, are not found anywhere in very great plenty; the rye grass thrives on whinstone lands, and timothy on sandy and granitic soils. Most of these are exotics. Two or three varieties of rib grass, also chicory, trefoil, burnet, and some other herbs, which stand the winter, have been introduced, and in that season afford good food for sheep. In the swamps and wet places in the county of Argyle, a coarse sedgy grass abounds; it is not eaten by cattle unless when young. In that part of the colony, there are many low places between hills, where the fall is not sufficient to enable the water to work itself a channel; and the surface being also covered with coarse grass, encreases the difficulty; the water, therefore, in rainy

seasons, spreads about upon the surface, until it becomes completely saturated with moisture: these places are termed swamps in the colony; but they certainly do not deserve the name, since it is always possible to ride over them in the wettest season. By simply cutting a small ditch to convey the water from the hills into the nearest stream, I have converted these places into sound and productive meadows: and have made from them a good quantity of hay, much relished by cattle in the winter season, and have obtained besides a good after-grass, of great service to my working oxen in the autumn.—In the unoccupied districts in the interior, and also in those tracts that are only used for the purposes of grazing, the grass in winter becomes withered by the frosts, and assumes the appearance of bad coloured hay; in this state it is refused by the cattle; and as it impedes the growth of young grass, the common practice is to set fire to it. The natives also pursue the same system, setting fire to the thick brushes and old grass every summer; the young herbage that springs up in these places, is sure to attract the kangaroos and other game; and the horned cattle are also very fond of feeding upon this *burnt ground*, as it is termed in the colony; they should, however, be kept from it as much as possible till it has acquired sufficient growth to form a good bite, as they pick about upon it before it is in a fit state to yield them any nourishment, and thus injure their own thriving materially. In dry seasons these periodical burnings sometimes assume a truly awful appearance; the country seems on fire in all directions, and if the weather is calm, is enveloped in

dense smoke. It is no doubt the means of destroying a great quantity of useful feed, but in the interior districts the practice is unavoidable; in the more settled and cultivated parts of the country it is frequently dangerous, and always injurious, and should be put a stop to by every possible means.

No person, to my knowledge, has yet tried any experiments to ascertain how far the native grasses might be improved, or made more useful by cultivation, or in what proportion they are nutritive, when compared with European grasses. It is true, very few of them will preserve their verdure through the winter, mild as it is in Australia. Some of these grasses are also said to be annuals; certain it is that keeping them close fed, so as to prevent them from perfecting the seeds, will soon totally destroy them. In many parts of the country, formerly most abundant in grass, there is now scarce a blade to be seen. I am of opinion, however, that some of them might upon trial, be found worthy of cultivation. In alluvial lands, a kind called blady grass is found; this is a very coarse variety, the ribband being half an inch wide, and it is probably not very nutritive; cows, however, fed upon it, yield a good quantity of milk.

In all low and warm situations near the sea coast, the grass grows high, and generally preserves its verdure throughout the winter; but is probably not so nutritive as in the higher lands, where it is withered by the frosts, but produces a shorter and sweeter bite in summer, and a more close and compact sod.

At Moreton Bay are many large species of grass, which might be advantageously cultivated for hay.

The useful fossil or mineral substances hitherto discovered are very few. Freestone, of a good quality, is found at Sydney and Parramatta ; it hardens by exposure, is much used in building, and also makes very good grindstones, especially that of the latter place. This kind of stone is also found in great plenty in other parts of the colony. Whinstone and granite, where they abound, furnish excellent road materials. Limestone, of a good quality, is not found any where to the eastward of the Blue Mountains. To the westward of those mountains, very fine limestone has been discovered, especially in the neighbourhood of Bathurst, and in the country to the southward of Lake George : at this latter place very fine statuary marble, and other varieties, were found by Mr. Trosby. Very fine marble is also found in many parts of the county of Argyle. Some of this strongly resembles the celebrated Giallo Antico of Italy ; there is also abundance of a very showy red and white marble, much used in Sydney for ornamental purposes. There is likewise great abundance of excellent statuary marble of the purest colour. Slate and ironstone, of good quality, have been observed, but no attempts have yet been made to convert them to any useful purpose. Coal is found very abundant at Newcastle ; the mines at this place have been worked for several years ; large quantities are consumed in Sydney, and a considerable quantity exported to the Isle of France, Batavia, and other places.

The colony is extremely favoured, in being totally exempt from the ravages of ferocious beasts ; none being found in any part to endanger the personal safety of the settlers.

The native dog is an animal somewhat resembling a jackall; it is of a black or red colour, though sometimes dirty white. It forms no burrows in the earth, but inhabits rocks, hollow trees, or thick brushes. The female produces about six or seven at a litter. This animal, unless the flocks are carefully attended, will commit serious depredations among sheep: it sometimes also will steal a fowl from the roost; but the extent of its ravages, where common care is taken, is seldom very important. It is not very swift of foot, and easily taken with good dogs. The kangaroo dog, a large variety of greyhound, is usually employed for this purpose. The Agricultural Society has very patriotically offered a reward of half a dollar for every brush brought to any of its members; and an annual reward besides for those who kill the greatest number. The effect of this measure has greatly reduced their numbers in many of the grazing districts in the interior, where they were before very abundant.

The native cat is a carnivorous animal resembling the weasel; it is of a dark brown or black colour, spotted with white; this animal is a serious annoyance in the poultry yard, frequently carrying away young chickens. It inhabits holes in decayed trees; and the best way to get rid of this and many other kinds of vermin is to cut down and burn all the decayed trees in the neighbourhood of the farm yard.—The above are the only two animals in the country strictly carnivorous.

The rat, or native rabbit, has all the habits of the domestic rat of Europe; the form of the head is rounder, and the ears longer, more resembling the rabbit; its tail

is long and bushy. It is not very numerous any where.

The kangaroos are of four kinds, viz. the burroo, or forest kangaroo; the wallabee, or brush kangaroo; the padgy melan, or brown kangaroo; and the wayrang, or rock kangaroo. There is also found in the interior another variety, called wallaroos; they are much larger than any of the others.—The different varieties of this animal furnish the principal and indeed only objects of chase in the colony worth mentioning. The form of the kangaroo being well known, it is unnecessary to describe it here. The forester is the largest of the common kinds, frequently weighing a hundred and fifty pounds. It is seldom found in an open country, delighting in forests that have occasional thickets of brush. In unoccupied tracts it is sometimes seen in flocks of fifty or sixty; but its destruction is soon effected when the country becomes inhabited, as the female brings but one at a birth. This animal is exceedingly swift when first started, going off at a great rate, by leaping on its hind legs, covering twelve or fourteen feet at each bound; it, however, soon gets tired, and is easily taken by good dogs: when hard pressed, it turns upon its pursuers, standing erect, and fighting the dogs most resolutely. It has three toes on its hind feet, the middle one of which is long and pointed; supported by its tail, it strikes forward with this dangerous weapon, and inflicts severe wounds on the dogs. It requires five or six good dogs to master a large animal. Its tail does not seem of much use to it in running, unless to preserve its balance, as it never touches the ground. The animals of this

kind that are not quite full grown are termed flyers; they are exceedingly swift, and can seldom be taken unless the ground is soft.

The wallabee and padgy mellan seldom exceed thirty or forty pounds weight; they inhabit brushes, and afford good sport in the chase.

The wayrang is about the size of the two last kinds; it inhabits among rocks and places difficult of access. It differs from the other species in having a long bushy tail.

The flesh of all the species of kangaroo is wholesome and nutritive; it has no fat, except a small quantity round the root of the tail; this part of the kangaroo makes excellent soup, highly esteemed in the colony. The skins make good leather, and also form an article of export; they are worth in the colony from 1s. to 3s. each, according to their size.

The wombat is an animal that forms burrows in the earth, and lives upon roots and herbs; its flesh is good eating, being very fat. It weighs sometimes eighty or a hundred pounds.

The coolor or maingee is of the sloth kind; it inhabits the hollows of trees, and lives upon their leaves; its weight is about twelve pounds. The natives are extremely fond of its flesh, which appears to be a delicate meat.

Four species of the flying squirrel and two kinds of opossum inhabit the trees, and form a principal part of the animal food of the natives; the fur of these creatures might probably afford good materials for hats.

The kangaroo rat is a small animal about the size of

a rabbit ; it runs very swiftly ; the flesh is of little value, and they are not very numerous.

The bandicoot is about the size of the common rat ; it burrows in the earth, and feeds upon roots ; its flesh is highly esteemed by the natives.

The ornithorynthus and echidna, those curious animals which have caused so much discussion among naturalists, are still frequently met with in many parts of the country.

The above are, I believe, all the principal quadrupeds hitherto discovered on the continent of New Holland.

The coasts of New South Wales abound with fish ; the black natives are excellent fishermen, and from them the town of Sydney formerly derived its supply of that article. The best kinds are snappers, king fish, rock cod, bream, mullet, whiting, and mackarel. Rock and bed oysters, lobsters, crayfish, and prawns, are also found in many places. The rivers falling into the sea on the eastern coast have plenty of perch and eels. The Lachlan, Macquarie, and other rivers in the interior, abound with fish of a large size and fine flavour : they have not, I believe, been properly described as yet, but resemble the rock cod and mullet of the sea coast.* It is a very singular circumstance, that no eels have yet been found in any of these rivers.

The feathered tribes in New Holland are extremely numerous, and many of them remarkable for their singular character and beautiful plumage. The emu,

* The *Cernua Bidyana*, of Sir Thomas Mitchell.—ED.

when standing erect, is sometimes five or six feet high ; it has no wings, but runs very swift ; it is covered with feathers of a very singular kind, and immediately under the skin is found a large quantity of fat, which yields a fine oil, very useful for oiling shoes and other leather articles. The emu is taken by hunting it with the greyhound, and affords good sport ; it is principally found in open countries, and feeds upon herbs, flowers, and seeds of trees. That singular bird, the black swan, is found upon the lakes and rivers of the interior, but is very shy, and disappears as soon as the country becomes inhabited. Wild ducks are very abundant every where in the interior : they are of four kinds, afford good sport, and are excellent eating. Pigeons of several species abound throughout the colony ; they are easily shot, and are fine eating. Snipes, plovers, and quails, are also found, but not very numerous. The finest bird, however, of the game kind, is the wild turkey or bustard ; it is nearly as large as an English goose, and excellent eating, but they are not very common. My limits will not allow me to enumerate the many other birds with which this country abounds, and I shall therefore merely mention a few of the most remarkable. There are several species of the parrot and cockatoo kind, with most beautiful plumage ; they are frequently very troublesome in corn fields, and also destroy the buds of fruit trees. The common crow and three species of magpye abound every where. There are several kinds of hawks, that will sometimes steal young chickens, but are not otherwise mischievous. The native pheasant is remarkable for its beautiful tail, but is not fit to eat.

There are no birds in the colony deserving the character of singing birds.

The reptile tribe is rather numerous, and some of them highly dangerous: of these, the most fatal is the brown snake; its general length is about five feet, the body is brown above, and yellow beneath; the head is large and flat, and the mouth wide; its poison is exceedingly active and virulent, and unless an immediate remedy is applied, inevitably proves mortal; the natives, when bitten by them, tie a ligature above the place, and then scarify and suck the wound, spitting out the blood. This is perhaps the only safe and effectual remedy that can be applied.—The diamond snake sometimes attains the length of thirteen or fourteen feet, and as thick as a man's leg, but its bite is not dangerous; the flesh is highly esteemed by the natives. Scorpions, centipedes, and tarantulas are also found, but their poison is not very dangerous, and they are not numerous.

The insect tribes in New Holland afford a wide and entertaining field for the naturalist, many of them being extremely curious and beautiful; but it is unnecessary to enumerate them here. The most formidable to the farmer is a small dark caterpillar, that sometimes appears in vast numbers, committing great ravages upon the grass and growing crops of corn. Locusts are plentiful in the summer, but have never been known to do any injury. Flies are very numerous and troublesome in summer, and great care is requisite to protect meat and other articles from their ravages. Mosquitoes, except in low situations near water, and where there are thick woods in the neighbourhood, are not very

numerous, and seldom of any serious inconvenience. The town of Sydney, in the summer of 1824, was visited by immense swarms of these insects, a circumstance never experienced there before; and what was very remarkable, the large blow flies, that had formerly been very troublesome, disappeared immediately the mosquitoes made their appearance.

CHAPTER IV.

SYSTEMS OF AGRICULTURE IN THE COLONY.—WORKING CATTLE AND IMPLEMENTS.—CROPS.—SILOS, OR UNDERGROUND GRANARIES.—HORTICULTURE.—AN ACCOUNT OF THE INDIGENOUS AND EXOTIC FRUITS.

THE first step in commencing a farm in Australia, is to cut down a few trees, and erect a bark hut ; this is effected by setting up corner posts of saplings, surmounted by plates, and the frame of a roof of small poles. Some large sheets of the bark of the box or stringy bark are then procured ; some are set up on their ends to form the sides, and others laid up and down to form the roof, with one or two long pieces lengthways to form the ridge, securing the whole by tying it with strips of the inner bark of the stringy bark ; a space is left for a door, and a square hole cut for a window, and pieces provided to close these apertures at night ; some long pieces are then built into the form of a chimney at one end, and sods placed inside to prevent their catching fire. Care is taken to give the different sheets sufficient overlap to allow for their shrinking, and also to give the eaves sufficient projection to carry the rain water from the walls ; a trench is dug round to carry off the wet ; and thus a habitation is built in the space of a few

hours, that will resist the utmost inclemencies of the weather ; and many of the early settlers have lived in no better for more than twenty years. The interior is then furnished with platforms of bark for bedsteads, and a sheet of the same material for a table ; some blocks of wood supply the place of chairs ; and these, with an iron pot, frying pan, bucket, tea kettle, tin dish, and a few tin pots and pannikins for drinking out of, complete the whole essentials of the establishment. Blankets and flock mattresses form the bedding ; a few bags contain clothes, flour, tea, sugar, &c., and perhaps the settler is sufficiently rich or has credit to procure a small steel mill and wire sieve for grinding and dressing his wheat into flour. Many of these people possess nothing more than what is here detailed, with the exception of a few of the most necessary tools.

The hut being erected, they proceed to fell more trees ; this is done with an axe, the edge of which is about two and a half inches, with a large eye, and weighing about 6lbs. ; the trees are cut through with this at about three feet from the ground. Having felled as many as they think will clear sufficient ground for their first crop, they next lop off the branches, and pile them round the middle of the trunk so as to burn it in two pieces, these are afterwards rolled round so as to form one fire. The smaller trees are also cut up and rolled to the large ones ; thus the ground is cleared, leaving the stumps in the land. The next step is to break up the soil with a large hoe, eleven inches long, by seven inches wide, the handle is usually rather short ; this the labourer raises over his head, and brings down

with all his might. It would surprise an English farmer very much to see how effectually this implement will break up land when it is not too hard. If the ground has much grass upon it, they suffer it to lay a short time to wither, and then go over it again with a hoe before it is sown; but if there is not much grass, and the land crumbles in breaking up, it may be sown immediately. Wheat is sown broadcast, and chipped in with a hoe to cover it. But the most usual first crop is maize; this is planted in the month of October; while it is growing the settler is occupied in putting some kind of fence round his crop, frequently nothing but boughs and brushwood of the rudest description, in earthing or hilling his maize, or in felling and burning off more land against the season for sowing wheat. The maize, if put in early, will be ready for pulling in March or April; the cobs are then gathered in, and put away in a loft, formed with some sheets of bark in the roof of the hut, and the stalks pulled up and burnt. The ground, without further preparation, is now sown with wheat, and the seed chipped in with a hoe. The wheat will be ripe in November; as soon as it is reaped, *stubble corn* or maize is planted, perhaps even before the wheat sheaves are carried off; after the corn is above ground, the spaces between the holes are chipped over with a hoe. This maize will be ripe in May; but before that time arrives, the wheat seed-time has come round again; wheat is therefore broadcast among the standing crop of maize, and chipped in as usual: thus two most exhausting crops are raised from the same land in a year. Sometimes, however, from

the backwardness of the seasons, or other causes, it is impossible to do this ; the crop then becomes alternate, wheat one year and maize the next ; and this is the only rotation the land ever obtains : many even neglect this most important point in good farming, but sow wheat on the same land, year after year, for a succession of seasons.

The consequence of this miserable system (says the Author, writing in 1826) is, that the land in a few years gets exhausted, and having very little tillage, is entirely covered with weeds. Even on the banks of the Hawkesbury and Nepean, where its great fertility would seem to defy the exhausting effects of this double cropping, the land becomes covered and choaked up with wild vetches, and other rubbish, so that no crop can come to perfection ; the plan then adopted is to let this lie fallow, as it is termed, that is, to suffer it to lie untouched for several years, to be overgrown with mimosas, and to become a nursery for rank and noxious weeds of every description. In the mean time, the settler clears another piece of fresh land, and with this proceeds as before.

I shall now proceed to describe the system pursued by the better sort of settlers—men who have either come from England with sufficient capital for their establishment, or have acquired it by patient industry and economy within the colony.

Even among settlers of this class, there was at first great deficiency of agricultural knowledge and rural experience, but if they knew little practically of farming, they had at least the advantage of having nothing

to unlearn, which is not always the case with many who arrive from England, wedded to systems that they have been accustomed to follow under a very different state of things. Considering that a large part of the agriculturists in New South Wales were originally officers in the army and navy, or young men from school and college, or inhabitants of great towns, their success is quite extraordinary.

The working cattle most usually employed are oxen. The breed of horses,* common in the colony, is not well adapted for draught; a pair of the best horses of that kind can be had for £50, but, unless well kept and allowed corn, they will not be able to perform more labour than a pair of oxen. The common interest of money is £10. per cent.; a pair of horses will not be fit for active work above ten or twelve years, and will then be worth very little, so that a sum of at least £3. 10s. per annum must be laid by or provided to replace the horses when incapable of further labour, making a sum of £8. 10s. per annum for the interest of money, and to replace the capital; the expense of shoes will be near £1. a year for each horse. A pair of well-broken oxen, four years old, and fit for immediate work, will cost at the most £20.; they will work till they are eight years old, with nothing but grass which nature provides, and if allowed twelve months' run after that period, upon good grass, they will, as beef, nearly replace their first cost. I never use any other draught cattle than oxen; they plough in pairs, guided by the ploughman with

* Horses and oxen are now cheap and abundant.—Ed.

reins, without a driver ; they are harnessed with collars, bridles, and bits in their mouths, precisely the same as horses. I allow three oxen to each plough, changing one every day, so that each beast works two days and rests one. Their usual day's work is three quarters of an acre, except when breaking up new land, then four are used to each plough, and they perform half an acre a day. They never get any other food than the natural grass, though it would certainly be desirable to assist them with a little hay or turnips in the winter. I usually break in my young bullocks at three years old, and the first year work them in yokes at light work, such as harrowing, &c., in teams of four or six together : the next year they are put into the plough teams, and worked in collars with reins. The expense of ploughing in this manner I estimate at about 4s. per acre. Many reasons besides those here mentioned might be adduced, why the preference should be given to oxen as working cattle, in the present state of the colony. Six oxen will not cost more than two horses ; the latter will be unable to break up new land, which four of the former can effect, leaving two for a change. Should any accident happen to a horse, so as to render him unfit for labour, a very heavy loss will be experienced, while an ox may be fatted and will then nearly replace his first cost ; besides, he will be content with the grass generally to be found every where. They are also best in swampy and wet places, being not so easily alarmed, and never plunging when they find themselves sinking. In breaking up new land, where roots or stones abound, oxen are infinitely superior to horses, being a more

steady and temperate draught; the latter, when the plough meets with an impediment of this kind, will snatch and plunge, and most probably break some of the *tackling*, but oxen immediately stop until told to go on again.

The wheel carriages in most general use in husbandry are light carts; they are built in the colony, of a good construction and materials, complete, for about twelve or fourteen pounds; unless, however, they are very light, they should always be built to shoot, in the manner of dung carts or tumbrils, to render them useful upon the farm, as well as upon the road. Proper carts for carrying manure, stones, &c. are very rarely to be met with, owing to the little attention paid to manuring by the majority of farmers. Waggon are not much used, and those that are possessed by a few persons, are generally built on very defective principles. On farms, however, where there is much wool or grain to carry to market, a vehicle of this description is extremely useful; carrying a much larger load, and descending hills and steep places with great facility. They are also very useful in drawing in split stuff for fencing and building, if so constructed that the back or body will take off upon occasions; temporary rough bolsters, with short stumps, may be placed on the carriage, and a large load carried with ease and facility, which it would not be possible to lay on a cart. Most people now use drays; they carry some kinds of commodities very well, and are easily loaded and unloaded; they are strong vehicles, not liable to upset, and carry fencing stuff better than any other two-wheeled carriage. The harrows in use are of

a simple and frequently rude construction, and only used for covering seed. Large pulverizing harrows, grubbers, scarrifiers, drill, or other more complicated agricultural machinery, are seldom seen.

The plough in general use is the swing plough; a great many iron Scotch ploughs have been imported, and answer very well. Perhaps the kind of plough best adapted for general purposes is that with an iron foot and mould-board, and wooden beam and handles; they are not so expensive, and are more easily repaired in case of accident. A wrought-iron share is best for breaking up new land, but after the ground has been completely cleared of roots and large stones, cast-iron shares may be used with advantage.

No system of agriculture can be said to have been as yet established in New South Wales; even on the best cultivated farms, very little has been done towards introducing a proper rotation of crops. The same destructive recurrence of wheat year after year is too generally practised, without the intervention of green crops, and with little aid from manure to recruit the fertility of the soil.

The first crop is generally wheat or maize. I have found it best to break up new land in spring, before the ground gets hard; to let it lie until the month of February or March, and to cross-plough it, and work it well to pieces with a strong harrow; then to plough it once more, and sow it with wheat upon the furrow; in this way, the turf has sufficient time to rot before it is again disturbed; and the new land experiences the full benefit of exposure to the air and summer sun.

Maize, or Indian corn, on low and flooded lands, is much planted as a first crop ; and where the soil is rank and contains much vegetable matter, its effect is very beneficial ; the hand labour required in its cultivation, pulverising and exposing the soil, and fitting it for the reception of wheat as the succeeding crop. Potatoes, in the upland districts, where maize does not come to perfection, are a good first crop, and make an excellent season for wheat. For the information of new settlers, I shall here shortly describe a plan I have practised with success in planting this root as a first crop ; the method is very rough husbandry, but a new settler must endeavour to draw some return from his labour as early as possible, and to him the hint may be useful, if adopted to a limited extent.—The months of September and October are the best season, as above mentioned, to break up new land to be sown with wheat the succeeding autumn ; it is also the season for planting potatoes as a field crop. As soon as the plough had gone two or three bouts, and a good open furrow was obtained, the plough was taken up, and a thin flag pared off as fleet as possible, and turned down into the open furrow ; upon this the sets were placed ; the plough was then let out, and brought round again in the same place, taking up the mould from the bottom, and turning it over the sets : in this manner the operation was continued, placing a row of potatoes in every fourth furrow ; the surface immediately over the seed was afterwards broken with a hoe to cover it more effectually, and when the plants were at a proper height, they were earthed up in the same manner. If the seed is prepared before-hand,

two persons may attend one plough, and will plant half an acre per day. The quantity of seed per acre is about seven cwt.; and the return with me has generally been about eight for one. This plan cannot be adopted where there are many large roots or stones in the ground, but where it can be practised, will well repay the expense of seed and labour, though the return will be small compared to what it might be were the lands properly broken and pulverized.

I am of opinion that when a proper system of agriculture is introduced, maize will be very little cultivated,* except as a first crop, or in peculiar situations on alluvial lands; it will indeed be always useful as a saving crop on lands that from any accident have not been sown, as the season for planting is after every other grain. The best rotation, I think, on all upland situations where the soil is tolerably light, will be wheat, turnips, barley or oats, grasses, and peas. It is to be observed, that the wheat harvest comes sufficiently early to admit of the ground being ploughed and turnips sown the same summer; these may be fed off with sheep in time to sow the barley early the ensuing spring. The grasses must be sown with the barley or oats; the grain will be ripe in December or January; and the grasses may be fed off with sheep through the remaining part of the summer and autumn; and the next year it may be cut for hay: this may be done in

* Experience has shewn that this opinion was erroneous. Maize will always be cultivated in climates suited to its growth.

November, and the rouen may be pastured and folded over with sheep until the next August, which is the best season for sowing peas. In stating my conviction that this will be found the most convenient and profitable rotation for the upland and colder districts of the colony, I must candidly confess, that the period I have been settled has not allowed me sufficient time to introduce the system fully upon my own farm, but I have adopted it as far as possible; and in one or two years more, shall have sufficient land in cultivation to carry every part of the plan into effect: my experience, however, as far as it goes, has hitherto confirmed my opinion on the subject. The rotation of five crops here alluded to, will occupy a period of four years. Some persons will, perhaps, think it better to omit the crop of peas, and sow wheat at once upon the clover lay; but in the upland districts, where maize does not come to perfection, peas are one of the most valuable crops that can be raised, pork being an article in great demand, both for sale and domestic consumption; and unless a crop of peas is introduced, or something equivalent, the barley produced in the course here recommended will not be sufficient to fatten a proper quantity of pork; and I have found by experience, that peas make a most excellent season for wheat. The making of hams and bacon has hitherto been little attended to; indeed many persons thought the climate too hot for the purpose, but I have ascertained that hams, of a quality equal to the best English, may be made for four or five months in the winter season; they sell readily at good prices in

the colony at present, and when they become plentiful and cheap, a market may be found in the East Indies for any quantity.

The principal impediment to the introduction of a proper rotation has been the want of a demand for barley, or, in fact, for any other grain than wheat or maize; but breweries and distilleries are now becoming numerous, and good malting samples of barley will always sell readily. Green crops were also formerly of very little value, the natural grasses being competent, even in the county of Cumberland, to fatten a sufficient supply of meat for the Sydney markets; but now, by the exhaustion of the natural grass, and the great increase in the numbers of live stock, the principal flocks and herds are removed to such an immense distance in the interior, that it will be impossible to bring down fat stock, particularly in the winter season, without a very considerable loss of flesh—and every year increases the difficulty; it will therefore become necessary to fatten stock, bred in the interior, upon artificial food raised nearer the markets; and thus it will become, and I am satisfied is now, possible to grow green crops at a very considerable profit, independently of the improvement that would be thereby effected in the land, and the consequent increased amount of the grain crops. Wheat and other grains are generally sown broadcast on the furrow, and harrowed in. Very little drill husbandry has hitherto been practised, although in many instances its introduction would be highly beneficial. Wheat is sometimes ploughed in, and the plan has been attended with good success, particularly in dry seasons: I tried it

myself to some extent, in the dry season of 1824, with much advantage. The roller is very little used; I do not believe there are six at this time to be found in the whole colony; its use would, however, be attended with many benefits,* especially in rolling grain crops in winter, for the purpose of closing the ground round the roots of the plant, to protect it from the effects of the droughts of spring, and to prevent it from becoming root-fallen; I have much used the roller this way, and found it highly beneficial.

The stumps of the trees, which are suffered to remain in the ground, are a very serious impediment to good husbandry;—they are perpetually in the way in every operation;—it is impossible to drill crops among them; and though people do manage to plough and harrow, yet it is attended with much inconvenience, and is continually the means of breaking the implements. The immediate neighbourhood of the stumps not being tilled, becomes the nursery for noxious weeds, and their entire removal would be attended with the most substantial benefit; at present, however, probably three-fourths, or at any rate one half, of the cultivated lands in the colony have the stumps remaining in them.

The quantity of land to be managed by one plough will depend upon a variety of circumstances; but where the land is properly cleared and brought into cultivation, and a suitable rotation of crops adopted, so as to distribute the labour equally throughout the year, a plough with three good oxen will probably be able to do all the work

* This is very doubtful in a hot climate.

requisite upon eighty acres. It will be recollected, that the farmer is never set fast by deep snows or long frosts ; and though the drought will sometimes render land in a state of nature too hard to break up, yet the seasons will very seldom prevent him from prosecuting his operations regularly throughout the year. Road work, however, is more tedious than in England, the markets being more distant, and the journeys consequently longer.

All kinds of grain are usually reaped with the sickle, the scythe being very little in use for this purpose. Moderate sized stacks, set upon steddles, clear of the ground, and barns that admit a free circulation of air, are best suited to the climate, as grain in the straw is very subject to weevil and fly-moth, if collected in large quantities, especially if the straw, or the situation in which it is placed, be damp. It is a common fault with the settlers to let the grain stand till dead ripe, whereby much loss from its shedding is frequently incurred.

Some few farms are furnished with threshing and cleaning machines ; but in general they are not of good construction, and the most usual way is, to thresh out the grain by hand, and to winnow it with sweeps or fanners, or in a current of air :—very few use wheat screens, and to this imperfect manner of cleaning the corn, and negligence in preparing the seed, may be attributed the prevalence of drake, which is a great pest to the farmer, and materially injures the crop. Granaries of a good construction are very rare ; many people are of opinion that under-ground granaries, similar to those used in the South of Europe, would suit the climate best ; but I believe they have not yet been tried.

The varieties of wheat in most general cultivation are the common red lammas, and the creeping wheat; there is also a variety called the Macquarie wheat, having been introduced by Governor Macquarie, and which is a native either of Syria or Egypt. The red may be sown late and ripens early; it does not tiller much upon the ground, and is subject to smut: the grain is large and heavy, and produces good flour; the quantity of seed per acre may be stated at two bushels. The creeping wheat should be sown early; it ripens after the red; it tillers very much, and does not shoot up into spindle till the summer begins to advance, when it runs up and comes into ear quicker than any other sort: the grain is plump but small, and is very little subject to smut; it makes excellent flour; the quantity of seed per acre is one bushel and a half.

The Macquarie wheat is a very hardy bearded kind; the grain is coarse and flinty. There is a kind also called the dumpey or dumpty wheat; it grows with a short and thick ear and short straw; the grain is white and not much subject to smut, but very difficult to thresh out. I can give the average produce of the whole colony from mere conjecture, but it does not probably exceed fifteen bushels per acre; and when the miserable system followed in cultivation is duly taken into consideration, its small amount will not appear surprising. On farms properly managed, the produce is about the same as upon lands of the same description in England. The smut in wheat, so prevalent in the colony, seems entirely owing to bad husbandry. The same land is sown with wheat year after year without

any change of seed, and without the smallest pains bestowed in preparing the seed. I have never, but with one very small exception, sown wheat on the same land two years successively, and have always steeped my seed wheat in strong brine, and afterwards mixed a small quantity of lime with it, and I have never had any smutty wheat. Rust sometimes appears, but is not very common; and wheat is sometimes blighted by the hot winds or other causes in the month of November, more especially upon alluvial lands, and other low and confined situations, where there is not sufficient circulation of air.

If the winter be open and moist, with little frost, the wheat grows very rank, and comes forward too fast; it has even been known to be injured when in bloom by the late frosts of spring; the best prevention is to keep it fed down with sheep until the end of August, especially the red wheat; the treading of the animals is highly beneficial to the crop, and prevents its becoming root-fallen in spring, while eating off the plant causes it to stool or tiller.

The maize cultivated in the colony is of various kinds, white, yellow, and purple. It is a fine and productive grain, of a most luxuriant appearance in a growing state; in proper situations it yields an abundant return. The grain is an excellent and very forcing food for horses, swine, and poultry; it is also converted into a wholesome bread for man; and when malted makes good beer, but possesses less saccharine matter than barley. It is planted in holes formed with a hoe, about three feet apart each way; at a proper stage of its

growth it is hilled up with a considerable quantity of earth. The *cob* or cone of grain is enveloped with a thick coating of leaves, called its *husk*; the grains are disposed round a core in a very compact form. When ripe, the cobs are gathered in, each stalk producing one or two, and spread upon a floor to dry, and, as opportunities offer, the outward husk is stripped off; it is then spread about eighteen inches thick upon a floor, (if spread too thick it is apt to heat and get mouldy;) when quite dry, the grain is detached from the core by thrashing the cobs with a flail, or rubbing them with the hands; this is termed *shelling corn*. The average produce I am hardly able to state, but on forest lands it is perhaps about forty, and on flooded lands about eighty bushels the acre. I have already given my opinion of this grain as an object of cultivation in a regular course of husbandry. It requires a great deal of hand labour, and is a most scourging crop to the soil. The other kinds of European grain are cultivated in the colony in such small quantities at present, that very little can be said respecting them. Two kinds of barley, the English and the Cape, are common; the latter is frequently sown for green food in winter. Oats of a very coarse kind, and also the Spanish oat, are sometimes grown, and I have found these answer better as green food than barley. Rye is sown, and its cultivation seems extending. Peas of different kinds are also raised, but not in any great quantities. There seems no reason why all these grains may not be brought to perfection on suitable soils. Beans do not seem to suit the climate; the plant grows luxuriantly, but keeps con-

tinually flowering and dropping off, and it is seldom that any of the pods will stand and ripen. I have not been able as yet to give this crop a fair trial; but suspect that if sown early, and the tops taken off so soon as the flowers begin to appear, it might succeed very well as a field crop. In the county of Argyle, and the country westward of the Blue Mountains, the maize will not come to perfection, and it is probable that the bean, and other European grains and pulse, may attain to greater perfection there than in the lower and hotter parts of the colony.

It is extremely difficult to obtain a true sample of seed of any description. The system of husbandry has been so slovenly, and corn crops have been grown in succession, without any intervening green crop to clean the land, that all the different varieties are jumbled together in the strangest manner. The consequence is exceedingly prejudicial to the crop, as where two or three kinds of wheat are grown in the same field, one sort will probably ripen a week or more before the others, and consequently will be shed and wasted, and become the prey of quails and parrots. The Agricultural Society have lately imported some samples of wheat, barley, Poland and pototoe oats, tares, and buck-wheat, and it may be fairly anticipated, that from them some prime sorts will be obtained. The most important point in good husbandry, change of seed, has been greatly neglected, and to this omission may be reasonably attributed the present inferior quality of the barley grown in the colony; no other grain requiring such frequent and careful changes of seed as this, to prevent

it from degenerating. It is true, the greater part of the county of Cumberland is unsuitable for the growth of barley, the soil being a stiff clay. But still there are many tracts in that county of fine barley land; and in the more elevated districts, the soil is well calculated to produce that grain.

No attempts have been made towards feeding or fattening live stock upon artificial food, except very partially with regard to sheep; nor has any system of farm-yard management, with a view to the production and preservation of manures, been adopted. The stable, pig-sties, and calf-pens, are the only places about the farm-yard where manure is collected: and as these are seldom half littered, the quantity made is very small; indeed the whole obtained upon many large farms is frequently expended upon the gardens, which in general are much too large, and only rob the rest of the farm. No value seems to be set upon straw; it is a very common practice to burn it, and when this is not done, very little care is taken to use it with economy and benefit. In the winter of 1824 I kept my milch cows shut up in the yard at night, and fed them upon hay, mixed with oat, barley and pea straw; they thrive much better than they would have done upon the withered natural grass in that severe season, and the yard being kept well littered with wheat straw, a large quantity of dung was obtained; the calves also had wheat straw given them in racks in their pen, and they consumed a large truss every night.

The green crops hitherto raised have been chiefly devoted to feeding swine, except some small portion that

has been appropriated to milch cows ; green barley and oats are also used as winter food for horses. Every variety of turnips is known in the colony, and, where properly cultivated, on suitable soil, they have been found to thrive very well. I have tried them to some extent, and obtained good ones. In 1824 they failed through the extreme drought of the season ; it is probable they would have succeeded better had they been drilled ; but I was not in possession of proper machinery, and could not obtain it in the colony. Rape has been cultivated as food for sheep with success. Tares, I believe, have never been tried, although as spring food they would be extremely valuable. Potatoes are grown to some extent, but are principally intended for market ; in the lower districts the soil is too stiff for this root, and the quality is inferior, except in a few places on brush lands, and on light sandy tracts, near the banks of creeks or rivers ; but in the more elevated parts, the quality is good and the return abundant. They are a good first crop upon new land, but will be inconvenient in any regular rotation, and are attended with much manual labour. It is probable the cultivation of potatoes will never be much attended to as a field crop. Cabbages, I believe, have never been attempted except in gardens, though the clay lands of the colony are well adapted for their production. All ideas of raising artificial food for stock must be abandoned for many years to come ; there is no need of winter food in general, except to fat cattle, and it is not probable that artificial feeding will ever be profitable as a mercantile speculation.

Tobacco may now be said to be fairly introduced as an object of cultivation, and it may be reasonably anticipated, that in a few years the export of this article will be an object of importance. Very few persons are; however, as yet, in possession of proper sheds and conveniences for drying and curing it. The produce, when well managed, has been of excellent quality. As the culture of this plant is likely to extend very considerably throughout the colony, I shall here insert Mr. BRADLEY's method, as communicated by him to the Agricultural Society, and for which he was voted a piece of plate by that body.

“ In the cultivation of tobacco, raising the plants is not the least difficult operation to persons unacquainted with it. Having marked the ground where I mean to raise my plants, it is covered with small brushwood, and this is burnt to kill any seeds or roots that may be in it, and it also helps the growth of the plants when the ground is cold. It must be raked very fine, and the seed then sown, but not covered with the rake: it may be pressed a little with the back of the spade. A hurdle, or something of that kind, must be laid over it, but so as not to touch the ground, and this is to be covered thinly with straw, only enough to prevent the rays of the sun from penetrating. It may be watered through the straw, which must be done once a day, and in very dry weather twice, as the surface should never be dry from the time the seed is sown until it is well up; then in wet or dull weather the hurdle and straw may be taken away, but the plants still nourished with water in dry weather.

“ The seed may be sown in August; it will be up in three weeks, and some of the plants may be transplanted in the latter end of October, and the transplanting may continue, when the weather permits, until the middle of January. Forest land, to receive the plants, should be well manured and worked fine. The

plants should be four feet between the lines ; but, if the land is not very rich, they may be planted much nearer. The planting should be done in wet weather, or while the ground is moist ; even if it should rain, no time should be lost. If a shower falls in the night and the morning looks like a dry day, plants may be put out, but they must be covered with a chip or a piece of bark, nor must they be uncovered for five or six days, unless it rains. Some seasons I have been obliged to cover nearly all my plants, and other seasons I have not covered any.

“ After planting, the first enemy is a black grub, which will destroy many plants. It lies in the ground, and there is no finding it until the mischief is done, when it will be found at the root of the plants ; it must be looked for and killed to prevent the loss of more plants ; they are imperceptible at first, but in two or three days they grow to a large size, and will do much damage. These must be diligently looked for and destroyed ; they are the worst in the beginning of the season, when the plants have not a strong root.

“ If the season has been wet, the ground will be hard and baked in dry weather ; the soil therefore should be loosened, and the plants will be much stronger. The employment now is to keep clear of insects and weeds until the plants are lopt. In doing this, I let the plants grow until the form of the blossom is just to be seen ; I then take off from the bottom the decayed leaves, and such as have been injured by the insects. Afterwards, I take off the top, leaving what the stalk will bear, generally from twelve to sixteen leaves. The work will now be to keep down the suckers until it is ripe, which state may be known by the curly and yellow mottled appearance of the leaves. It is then to be cut in dry weather and left on the ground, but only until it is softened, which is to prevent its breaking in removing to the shed. If it lies too long in the sun it will have a bad colour. Two men with a hand-barrow will carry it in the safest manner to the shed. It is then hung up, every stalk separate and clear of the other. Sheds for drying tobacco should be as airy as possible, and in wet weather assisted with fire ; perhaps charcoal would be the best. I

used wood, and found no inconvenience from it as to the quality of the tobacco. In this state it hangs until it is perfectly dry. It should be taken down in wet or moist weather, and the leaves stripped from the stalk, and if the tobacco is not good then, I think it never will be so.

"The greatest danger of spoiling tobacco arises from the want of proper sheds to dry it in. If it gets mouldy, I am of opinion that it can never be made good; but as for sweating, I think the higher it is in that state, the nearer rotten. I take great pains when I have a heap of leaf tobacco by me to keep it as cool as possible, by very frequently turning it, until it can be manufactured into negro-head. This is best done in wet weather; but, if the leaves are dry, they are to be sprinkled with water, and laid in a heap, until it has the dampness desired, which is just such that it can be worked without breaking the leaves. The stem of the leaf is then taken out, and the leaves twisted up in the size and form desired. It is then placed in a cask put under the press; it is in the press the tobacco gains its fine colour and smell.

"My press is as simple as any part of the process, being only a strong post placed in the ground with two mortices cut in it: one to admit the lever, the other to admit a strong piece of timber level with the ground for the cask to stand, so that one works against the other, and keeps the post steady: two men with block tackling can work it with ease.

"One acre of tobacco will require the constant labour of one man until it is fit to cut."

Tobacco has been manufactured on the Hunter by an American, which has deceived the best judges, and been sold to tobaccoists in Sydney as American negro-head.

Flax has been cultivated with success; the produce is of good quality, and the crop abundant. It would probably be a profitable crop for the purpose of exportation, especially on the alluvial lands, where its exhaust-

ing nature would do little injury. * Its production is at present limited to the demand for the factory at Parramatta, and other domestic purposes. The New Zealand flax has been introduced and thrives well, but has never been tried as a crop.

Hops are grown by the colonial brewers, and seem to answer well; but the demand being limited, the cultivation is not likely to extend. The male hop plant is not in the colony; it would be desirable that it should be introduced, as it is believed that the female produces more largely when the male plant grows in the neighbourhood.

Nearly all the English grasses, clovers, &c. have been introduced, and some of the principal settlers have sown considerable quantities; but in general the process of laying down the land to grass has been very ill executed. Lands that had been exhausted by a repetition of corn crops, and were full of seed weeds, have been sown with grasses, without being properly cleansed, and the consequence has been, that the grasses have soon been overpowered and destroyed by the weeds. In many cases, the species sown were not adapted for permanent pastures, such as red clover and cow grass, and of course decayed in two or three years. No idea of introducing grasses, as part of a rotation of crops, seems to have been entertained by any one; the sole object was to obtain permanent pasture; but no suitable selection of kinds, adapted to the soil and situation, was thought of, people generally sowing the seeds of such as they could obtain, without reference to their individual qualities, or endeavouring to obtain a due proportion of

each kind. Enough, however, has been done to ascertain that the whole of the European grasses will thrive in the colony, and stand the winter. White clover is spreading every where through the country, but it withers and almost disappears with the summer's drought. The other kinds resist the heat very well. Lucerne has been tried with great success; red clover flourishes amazingly, but it is said not to perfect its seed. The principal use that has been made of artificial grasses has been as pasture for sheep, and to supply the town of Sydney and the shipping with hay. This article is now sold, delivered in Sydney, at about £9 or £10 per ton.

Much difficulty is experienced in this, as in every other department of agriculture, in procuring good seed; and every person who intends laying down any considerable quantity of land to grass, will find it necessary to cultivate the different sorts in beds, or patches, and to collect the seeds as they ripen.

From what has been stated, it will be seen that the agriculture of the colony is in a very rude and infant state, and will require many years, and much fostering aid from the Local Government, to bring it to any degree of perfection. Many circumstances have hitherto contributed to retard its progress towards improvement; the principal of which has been the want of capital and skill in the majority of settlers; this defect nothing but time, and due encouragement held out to induce respectable men of capital to emigrate, can remedy. The difficulty of obtaining good farming servants, and especially good ploughmen, has always been a serious

impediment, and still continues so ; but were the masters generally possessed of more practical knowledge, it would be of less importance.

The irregularity and uncertainty of the markets have hitherto much retarded the improvement of agriculture. The price of every article of produce fluctuates extremely ; and although this may sometimes be an advantage to the few possessed of means of hoarding in time of plenty, against the return of scarcity, yet it is an evil to the greater part of the community. Formerly, when a plentiful season occurred, the markets were completely glutted ; and no vent being found for the surplus produce, the price generally sunk very low ; the natural result was, that a much less quantity of grain was sown, and this produced a short supply, and consequent high prices, and cultivation again extended. Thus seasons of alternate plenty and scarcity have existed from the first settlement of the colony.

The preservation and storing of grain in silos, or underground granaries, will gradually obviate this inconvenience. The following observations respecting them have been compiled from a report of Baron TERNEAUX, to the Society of Arts and Industry at Paris, as well as from very successful experiments in the colony.

SILOS.—Amongst the southern nations of Europe, in the Barbary States, in Hungary, Poland, and some parts of the Russian Empire, the storing of grain, in pits, sunk under ground, has been customary from time immemorial.

It was the practice also, amongst the ancient Gauls. Excavations for this purpose are still in existence at

Amboise in a bed of solid rock. They are attributed to the Romans, and commonly called the granaries of Cæsar. Pliny mentions the storing of grain, under ground, as the most certain mode of preserving it; and says that, in his time, it was practised in Barbary, Spain, Thrace, and Cappadocia. Varro expresses himself of the same opinion, and affirms that wheat may be thus preserved fifty years; millet a hundred years. In support of this, he states, that when Pompey the Great was engaged in the war against the Pirates, (66 years B. C.,) a quantity of beans was discovered in an excavation, near Ambracia, in Epirus, which were perfectly sound and good, notwithstanding they had lain there from the time of the invasion of Italy by King Pyrrhus, (283 years B. C.,) a period of more than two centuries. During the last fifty years several instances have occurred in Spain, of the accidental discovery of subterraneous stores of grain, in good preservation, of which there existed no recollection, and which had probably been established by the Moors, about the end of the fifteenth century.

"In short," observes Baron Terneaux, "the advantages of this mode of storing wheat are so well authenticated, that no doubt can be reasonably entertained of its superiority to all other modes; and in endeavouring to demonstrate this, should I fall into occasional error, I am not apprehensive of censure; for in an object of such importance, the mere excitement of discussion, and experimental enquiry, cannot fail to be of public benefit."

The advantages of subterranean granaries may be classed as follows:—1st. Simplicity and cheapness of

construction. 2nd. Security against destructive insects and vermin—against natural decomposition and decay—against fire, theft, and waste. 3rd. Equalization of corn, and the prevention of scarcity, by storing up the superabundance of one season, against the deficiency of another.

The construction of subterranean granaries, in those countries where they are in common use, is exceedingly simple. An elevated site is fixed upon, if possible the pinnacle of a small mount, so that there can be no drainage of water, into the granary, from higher ground in its vicinity. A pit is there sunk, resembling an inverted lime kiln; the depth and dimensions of this pit must depend upon the quantity it is required to contain, which may be 200 or perhaps 2,000 bushels.

The latter size is said to be preferred in Spain: and Baron Terneaux recommends it as the most advantageous. But in making a first essay, in this colony, which must be liable, more or less, to the mistakes of inexperience, it would be rash and ill-judged to exceed 200 bushels. Nor does there appear to be any material objection to trying the experiment, even upon a considerably smaller scale. The sides of the pit may be plastered with cow dung and chopped straw. At the bottom it is usual to place a layer of dry billet wood,—above that a bed of straw,—and over the straw a coarse mat; but these precautions against damp, are not always taken; and it is said, that if wheat be suffered to come into contact with the sides and bottom of the pit, the outer surface to the thickness of an inch or two, will cohere into a solid glutinous crust, im-

pervious to moisture, thus effectually securing the bulk of the grain from injury. A mouth, or entrance to the pit, of two or three feet diameter, is built in the shape of a chimney, to the depth of three or four-feet below the surface of the soil. After the grain is deposited in the pit, dry straw should be trampled down upon it, so as to fill the pit completely to the bottom of the entrance, over which a trap door of strong plank is closely fitted, and above this, dry stone rubbish is carefully trampled in, till the mouth of the pit is filled to its external aperture, which is generally from six inches to a foot below the surface of the ground.

Upon the top or external aperture, a solid flag-stone should be carefully cemented down, closing the pit hermetically. Above this the natural soil should be well trampled in: and lastly, a bed of cement may be spread over the whole surface of the pit, sloping gently from the centre, so as to form a sort of roof. No other covering is requisite: but, in this colony, the erection of a shed over the pit would not be attended with much expense, and would be an additional security against the admission of moisture.

It is of an irregular shape; the lower part of the pit being a portion of cone, over this is a hemisphere, of nine-inch brick-work, whose internal diameter is the same with that of the upper part of the conical portion. At the crown of the brick-work, or immediately over the centre of the base of the pit, is a circular orifice in the brick-work of three-feet diameter. Round this orifice is built a nine-inch brick-wall, three-feet in height, leaving the top, or outer aperture, three-feet in

diameter. The top aperture is eight or ten-inches below the surface of the soil.

Description, by Mr. MACARTHUR, of a Silo constructed at Camden, with an Estimate of the Expenses ; together with some observations on the most economical mode of filling these Granaries, &c.

AA. (*See accompanying rough sketch No. 1.*) natural level of the ground, or bank, upon which the Silos are situated.

BB. Thickness of the surface soil, with its substratum of clay.

CC. Beds of shale, in horizontal layers, loose and friable above, but very compact at the depth of a few feet.

EE. Extreme diameter of the upper portion of the excavation, *viz.* :—thirteen feet eight inches, and carried to the depth of seven feet.

FF. Smaller diameter of the Silo, ten feet eight inches.

FF. above, ten feet at bottom, and fourteen feet deep from the shoulders EF.

GG. Brick arch, nine inches thick, surmounted by a shaft of three feet diameter, and three feet six inches high.

HH. Space outside the brick arch, filled up for the first three feet with earth and small stones, rammed very hard to prevent the haunches of the arch from springing out when the centring is struck ; and the remainder with clay well rammed and puddled, and continued above the top of the shaft, after the Silo is filled with grain.

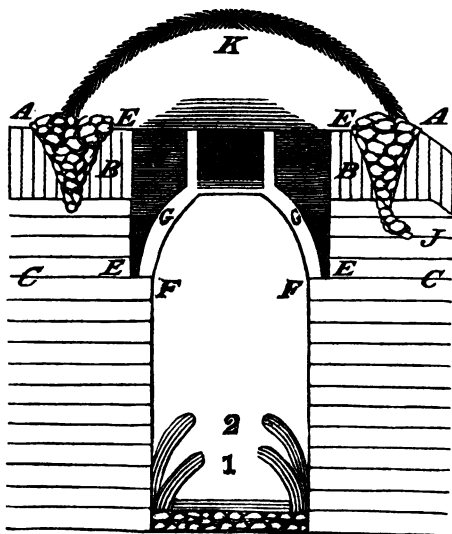
II. Drains cut through the superstratum of soil and

clay into the solid shale, and filled up with stones from the excavation, to intercept and carry off (as by the cross cut J) to a lower level, any percolation of water which may occur between the clay and the shale after long continued heavy rains.

K. Cone, or rather section of a ridge of earth, formed of the materials of the excavation after the Silo is filled with grain; and, for more complete security from the weather, thatched.

No. 1

SECTION OF A SILO TO CONTAIN ABOUT 950 TO 1000 IMPERIAL BUSHELS UPON THE SCALE OF A QUARTER OF AN INCH TO THE FOOT.



Account of expense incurred in constructing a Silo to contain from 950 to 1000 Imperial Bushels.

	£.	s.	d.
Excavating to the depth of fourteen feet, 53 $\frac{3}{4}$ yards at 2s.	5	7	4
Excavating from fourteen to twenty-one feet, at seventeen one-fifths ditto at 2s. 6d. ...	2	3	0
Powder used in blasting, 4lbs. at 1s. 6d. ...	0	6	0
3000 bricks at 25s., three loads loam 3s., lime mortar 5s.	4	3	0
Bricklayer four days at 4s. 6d., labourer four days at 2s. 6d., constructing brick arch and shaft	1	8	0
Proportionate expense of centring for arch ...	1	0	0
Rough carpenter and labourer each, one day fixing ditto	0	7	6
Ramming earth, and puddling clay over arch, two men four days each, at 2s. 6d. ...	1	0	0
Straw for lining Silo, and thatching outside	0	10	0
Filling Silo with grain, and lining the sides with straw, &c., two men two days each, at 2s. 6d.	0	10	0
Ramming earth into shaft, forming a thick coat of puddled clay and the earth, &c., into a cone over it, two men four days each at 2s. 6d.	1	0	0
Thatching outside	0	10	0
Fifteen yards of hollow drain at 1s.	0	15	0
To sundry expenses, such as water for puddling clay, &c., not taken into account	1	0	2
	<hr/> £20 0 0		

GENERAL OBSERVATIONS.

In constructing the Silos at Camden, it has not been thought necessary to use lime mortar for the brick-work of the arch, except a little for pointing, &c. The centring used cost about £8. and it has served for covering in eight Silos. It is proposed to construct four more, so that the proportional expense will be reduced, for this head, to 15s. The centring consists of fifty-four ribs, and eight curved pieces of scantling for top and bottom plates; a smaller number of ribs would have been sufficient, say from thirty-six to forty, owing to the gentle curvature in the first three feet of the arch, and a saving of about £2. in its first cost effected, besides less trouble in striking and fixing it.

The Silo above described has not yet been filled, but several others of various capacity, from 550 to 860 bushels, have been filled since the commencement of this year, and one containing maize has been emptied, of which some account will be given underneath.

The difference in the expense of constructing a Silo to contain 500 bushels, and one to contain 1000, will not exceed £2. 10s., besides a little allowance for diminished labour in lining the interior with straw and stowing the grain in the former.

In preparing the Silos for the reception of grain and filling them, the following practice has been observed at Camden; for the draining of the bottom, pieces of scantling, stems of young saplings, and whin-stones have been used, the latter are preferred; from twelve to fifteen inches in depth, is considered to be sufficient; a

quantity of long sound dry straw being provided, a layer of about nine to ten inches thick is carefully placed, resting upon its butt ends, all round the sides of the pit; another layer is then spread over the bottom and well trodden, over which a coarse open canvas cloth is spread; grain is then poured in (and well trodden, so as to compress it well against the straw which lines the sides of the pit) until it reaches to about half the height of the first layer of the straw lining (*see Sketch*); a second layer of straw is now arranged round the sides, with the lower ends placed well down behind the upper ends of the first layer; the filling in with grain is then continued; and so on, a layer of straw round the sides, and a quantity of grain alternately, until the pit is quite full; a day or two is allowed to elapse before the mouth is permanently closed up, to admit the grain to settle; it is then filled up again, a cloth spread over the surface, a layer of well trodden straw upon this, and then earth—every layer of three or four inches being well rammed before the next layer is put in, until the shaft is filled; puddled clay is then well rammed and beaten to the thickness of twelve or fifteen inches over the mouth of the shaft, and the cone of earth made up and thatched.

The mode of lining the Silos adopted at Camden, is conceived to be quite as good as that described by Mons. Terneaux, and is certainly much less expensive; according to his method, the workmen are obliged to commence the lining at the top, and to continue it downwards, to his great inconvenience; considerable expense is likewise incurred for iron hooks to confine it

to the roof and sides ; by the method above described this is all avoided, and the filling of the pit with grain is very little retarded, by the time taken up in placing the straw lining.

A Silo filled with maize and millet was opened at Camden, after the expiration of six months, and a great part of the grain taken out ; it proved to be in a state of perfect preservation, and the straw lining quite sound and dry, except a little near to the under surface of the brick arch. The straw was so compressed by the weight of the grain, to the sides of the pit, that it is believed that the whole of the grain contained in the Silo might have been removed, without in any manner disturbing the straw or taking any precaution to prevent it ; a few supports were however placed against the overhanging part, and the straw seems to be sound enough to serve for a second filling.

The Sketch marked No. 2, is given to show the Ground Plan of the site of the Silos, at Camden, as it is proposed to be when they are all completed, and the mode of surface drainage.

aa Silos.

bb Hollow drains filled chiefly with stones from the excavations.

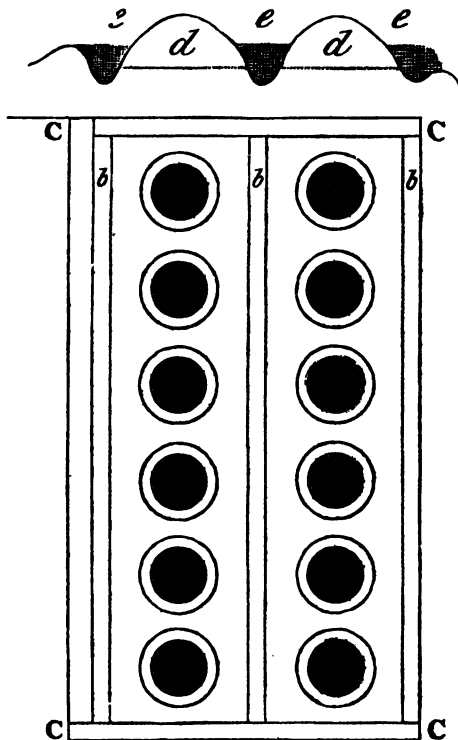
cc Cuts leading to lower levels.

dd Section of the two rows of Silos.

ee Shale, &c., from the excavations, disposed so as to form a cart-way between the two rows.

No. 2

GROUND PLAN AND SECTION OF A SERIES OF SILOS, UPON
THE SCALE OF AN EIGHTH OF AN INCH TO THE YARD.



Mem.—The excavation of the Silos has been performed by labourers, paid by the cubic yard, and they

appear to have earned at the rate of from 5s. to 5s. 6d. per day, powder for blasting having been found them, and quarry picks. All the other labour has been performed by servants, at £20. per annum, with rations; and a bricklayer at £50. per annum, with rations.

SILOS.

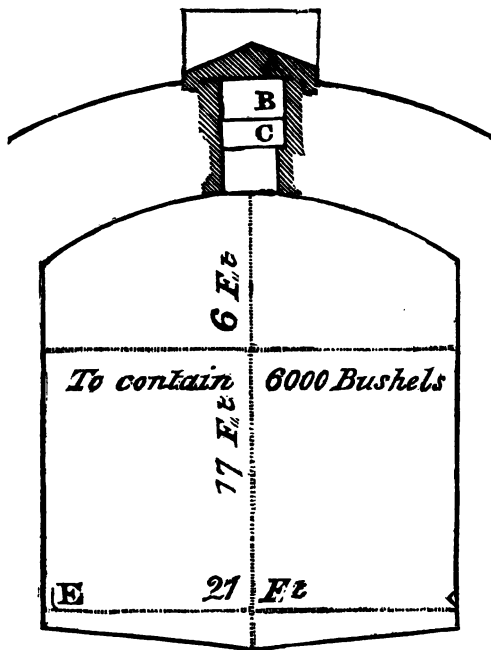
MEMORANDUM OF THE NUMBER AND CAPACITY OF THE SILOS, WHICH HAVE BEEN EXCAVATED OUT OF THE SANDSTONE ROCK AT COCKATOO ISLAND.

No.	Diameter.		Depth.		Capacity.	Remarks.
	Ft.	In.	Ft.	In.		
1	20	0	18	0	4800	Filled with Wheat. January, 1840.
2	20	0	17	0	4200	October, ditto.
3	20	0	15	3	3400	Ditto, ditto.
4	18	6	17	6	3500	Ditto, ditto.
5	18	0	13	6	2600	Ditto, ditto.
6	18	0	12	6	2400	November, ditto.
7	20	6	12	6	3000	} Now filling with Maize, September, 1841.
8	21	0	23	0	6000	
9	20	6	13	0	3000	
10	20	6	12	6	2800	} Preparing to receive Wheat Nos. 10, 11, 12, and 14, will contain 5000 bushels each by the time the Wheat is ready.
11	20	9	12	6	2900	
12	20	6	11	0	2700	
13	20	6	24	4	6200	
14	20	6	12	6	2900	
					50,400	

The Silos have been excavated out of the solid sandstone rock; the average form is exhibited in the accompanying sketch, which affords sufficient information for conducting similar works.

No. 3

PLAN AND SECTION OF SILO TO CONTAIN 6000 BUSHEL OF
WHEAT, AS EXCAVATED OUT OF THE SANDSTONE ROCK AT
COCKATOO ISLAND.



A, square covering, stone, $4' 3'' \times 4' 3'' \times 6' 6''$, bedded in Roman cement.

B, stone rubble, grouted with cement or hot lime.

C, square stone, $2' 3'' \times 2' 3'' \times 1' 0''$, laid dry, and the

upper joint round the sides covered by a cement fillet, to prevent grout running down.

E, layer of brushwood, with straw mat on the top. It has not been found necessary to line the sides with straw, as usually practised.

New settlers will find it to their advantage to confine their operations in gardening to the production of a few of the most useful vegetables, and the propagation of fruit trees ; after two or three years, when their farm begins to be fully productive and support itself, the labour of three men will be of less importance, and their maintenance of less expense, than one would be in the first commencement ; they may then appropriate one man to the management of the garden, and raise a variety of articles which will contribute greatly to their comfort and convenience : no garden can be properly attended to, unless at least one man is kept constantly employed in it ; there are always a number of little jobs and trifling operations to perform, which, however, are important to the raising the different productions in a proper manner ; and to execute these it will never answer to take off the farming labourers from their other and more important work ; any premature attempts therefore at elegance or perfection in gardening, will either prove abortive, or entail on the settler an useless and ruinous expense. The whole strength upon every new farm should be directed to the most useful objects, such as the clearing and enclosing land for grain crops, and erecting the most necessary buildings ; ornament and elegance must for a time at least be kept out of sight ;

the obtaining plenty of provisions must be the grand and only object ; upon the early accomplishment of this important point, the settler must rest his hopes of success ; when that object is once attained, everything will go on smoothly ; the labourer will feed the shepherd and mechanic—the shepherd will clothe the mechanic and labourer—and the mechanic will house the labourer and shepherd.

The propagation and planting of fruit trees must not, however, be neglected, especially of the more useful kinds, such as apples and peaches ; this very important point in rural economy, is not sufficiently attended to by the majority of settlers. The want of some kind of cheap and common beverage is much felt. Private brewing is very little practised ; and apple or peach cider would be most important and useful articles in harvest and other busy seasons.

The horticulture of the colony has by a few intelligent gentlemen been carried to great perfection. The esculent and culinary vegetables and roots of Europe are all produced in abundance, together with many others that cannot be raised in England without the aid of artificial heat.

INDIGENOUS FRUITS.

The colony is not destitute of indigenous fruits, as has generally been represented, but they have never received the attention they deserve.

The *Lillipilli Acmena elliptica* is a common plant, allied to the rose apple of the East Indies. The fruit is produced in great abundance, and makes a preserve very like strawberry jelly ; tarts made of the fruit are

nearly as good as cherry tart. There is no doubt that, by judicious cultivation, this might be rendered a useful garden fruit tree.

Another species of *Acmena*, which grows at Illawarra, produces a larger and much better tasted fruit than the *Lillipilli*, but the plant is rare and has never been cultivated.

Eugenia trinervis, a common plant at Illawarra, produces enormous quantities of fruit about the size of currants, and makes a jelly resembling a celebrated Brazilian sweetmeat composed of the fruit of the *Pedanga*, another species of *Eugenia*. It is extraordinary that the former plant has never been cultivated by the colonists.

Stadmannia Australis, commonly called the native loquat, is a superb tree, with leaves three feet long. It grows on all the rich brushes from Illawarra to Moreton Bay, and produces large quantities of fruit of an excessively sour taste. This fruit is very juicy and may be manufactured into syrup, which, when mixed with a due proportion of water, makes a most delightfully flavoured drink. The fruit is produced in clusters about two feet long, shaped like bunches of grapes. The young tree is often to be seen in gardens, where it has been introduced in consequence of the beauty of its appearance. As a fruit tree it has never hitherto been cultivated, indeed few know that it ever bears fruit.

There are many species of Fig, (*Ficus*,) in various parts of the colony; the natives eat the fruit of most of them, but there are only two considered good by Europeans. The trees, which are generally what

are called parasites, although not so in reality, are only found in the brushes.

Ficus macrophyllus, called at Sydney (where it is much cultivated as an ornamental plant) the Moreton Bay fig, is probably the handsomest plant of its widely-spread family. The plant called in the Brisbane district, the Moreton Bay fig, is not this plant, but one strongly resembling the *Ficus religiosa* of India. *Ficus macrophyllus* has a leaf about a foot long and four inches broad, of a regular oval shape, very similar to that of the common laurel, or to the fig well known in England as the India rubber plant. In the gardens of Sydney, the native plant has superseded the foreign, in consequence of its much superior beauty—a superiority the more remarkable, because the two plants are so much alike, that it requires a practised eye to discover the difference, by an inspection of the mere leaves. The leaf, however, of the native plant tapers more towards the point, than the leaf of the India rubber tree, and the plants may by that means be distinguished even when quite young. From a comparison of the published dimensions of many of the largest trees in the world, a *Ficus macrophyllus*, which grows on the south bank of the river Manning, is superior in dimensions to any of the *Baobabs* of Africa, or chesnuts of Mount Etna; in fact it is larger than any tree with a single stem which has been ever mentioned by travellers. It is a characteristic of this tree to throw out buttresses of wood all round the trunk; these buttresses are of thin dimensions, in comparison with their height and length, so that they form a complete wall of timber, which very

gradually slopes for many feet from the trunk to the ground. It would be unfair to give the measurement of a line drawn round these buttresses for the dimensions of the tree, as they do not grow in contact with each other; but at six feet from the ground, the circumference of the real cylindrical part of the trunk was sixty-six feet, measured as if the tape had been passed through the projecting parts. At the same height, if the tape had included the buttresses, it would have measured one hundred and ten feet; and if measured three feet from the ground, it would have given a circumference of three hundred feet. These buttresses in general spring from a height of six feet; many, however, are twice that height. The largest of these wooden walls measured six feet high at eighteen feet from the cylinder; at seventy-five feet it was still eighteen inches; and at ninety feet, six inches above the ground. These partitions would have afforded stalls for the horses of a squadron of dragoons. Dimensions such as these may give some idea of the gigantic proportions of this remarkable tree, but its extraordinary bulk cannot be imagined by those who have only seen trees in England, and in other cold climates. The timber is soft, and is not used for any purpose by the colonists; the fruit produced by plants in gardens is hard and about the size of a cherry, but under trees in their native state it is found as large as any garden figs. Perhaps this fruit may be produced by some other species of fig growing parasitically among the branches of the gigantic parent stem. The fruit, although insipid, is greedily eaten by the natives.

It is remarkable that all the Australian figs originally take root among the decayed vegetable matter lodged in the branches of other trees; after growing there for some years, they give out aerial roots, which descend perpendicularly along the bark of the fostering tree, until they reach the ground. They then enlarge, and at last completely envelope their nurse. Perhaps there is no instance of a tree of this description springing originally from the earth.

The Moreton Bay fig of the Brisbane colonists is also a very large tree, but not so remarkable as the last; the leaves have very long foot-stalks, and always quiver like those of the aspen; the fruit is small and pleasant to eat.

Another fig grows in the Brisbane country, and produces excellent fruit. This plant has very hard oval leaves about four inches long, as rough and hard to the touch as sand paper. The tree is small, with very dense foliage, the fruit round, and about the size of a cherry; it tastes exactly like the garden fig, and is produced in very great abundance, but it is a rare plant.

The Wide Bay fig is also known by the report of the blacks, who describe the fruit as being as large as a man's fist, and very good to eat.

Another fruit has been discovered at Wide Bay, which is considered very good by all who have tasted it. It is round, about the size of an orange, with a foot-stalk about six inches long, and a hard rind like that of a gourd containing large kidney-shaped seeds imbedded in a very sweet pulp. It appears to be a species of *Capparis*, but the flower is unknown. It was called by the people who found it, a pomegranate.

Sir Thomas Mitchell speaks of some other fruits which he found in the interior; amongst these is one very similar to the quandang, (*Fusanus acuminatus*), although there was no resemblance either in the form of the tree or of the flower. This shrub was not unlike the weeping willow in its growth, and the fruit, which grew at the extremities of the drooping branches, had the shape of a pear, and a black ring at the broad end. The crop then on the tree was unripe, and was probably a second one; the flower was also budding.

In the vicinity of the Nammoy he also found a fruit tree, which he thus describes:—Among the trees growing along the margin of this lagoon, were several which were new to me; particularly one which bore clusters of a fruit resembling a small russet apple, and about an inch in diameter. The skin was rough, the pulp of a rich crimson colour, not unlike that of the prickly pear, and it had an agreeable acid flavour. This pulp covered a large rough stone, containing several seeds, and it was evidently eaten by the natives, as great numbers of the bare stones lay about. The foliage of the tree very much resembled the white cedar of the colonists, and milk exuded from the stalk or leaves when broken.

Amongst the fruit trees of Australia may perhaps be classed the *Bunya-bunya*. It has but recently been discovered, and has attracted no inconsiderable degree of attention amongst the colonists, in consequence of the settlers being prohibited from cutting it down, on pain of losing their depasturing license, and the Commissioners of Crown Lands being forbidden to grant licenses for land on which the tree grows. The reason of this

proclamation is, that once in three years, when the *Bunya* bears, the natives gather from all the surrounding country to feast upon it, and the government evinces a most laudable anxiety to ensure the natives a continuance of their triennial banquet. The *Bunya* is a large tree growing on a range of mountains about 65 miles north-west of Moreton Bay. Its outline is very remarkable, being like that of a large umbrella, on an exceedingly long stick; the stem is often five or six feet in diameter, and sometimes seen one hundred and fifty feet in height. The trunk does not taper in a very perceptible manner for sixty or seventy feet; it is covered with a black bark, which at a distance looks smooth, but it is not so in reality, being scored all over with horizontal lines, which are very close together. About one third of the height is occupied by dead branches, and the living top does not comprise one fifteenth of the whole altitude of the tree. The branches are set on symmetrically, even to the top of the oldest trees; they are remarkably small, the largest not being an inch and an half through, and they never divide, but continue to grow from the point alone, until the upper branches kill the lower by obstructing the light. The outline of the tree is so remarkable, that it may be seen at a distance of three miles; the wood is very close grained and tough, and it is said to be durable; but how this has been discovered has not been stated, for, certain it is, that until the year 1840, this tree was unknown. The cones are as large as a man's head, and are entirely covered with sharp points. Had the tree grown in Scotland, it would undoubtedly have taken the

place of the thistle, as the national emblem. The difficulty of handling a hedge-hog, or a ball of about ten pounds weight, bristling with needles, may well be imagined. The eatable part of each seed is as large as the kernel of a Brazil nut, and one seed is contained in each scale of the cone. The taste of the nut, just before maturity, is agreeable, but it has no richness, and does not appear to contain any oil ; as the seed approaches maturity, the taste becomes unpleasant, and resembles that of a bean; the natives then roast the seed and pound it into a cake, on which they get very fat. So close is their search for the seed, that it is now most difficult to find any of the young plants, and it is probable, but for the coming of the white man, the tree might in a few generations have been exterminated. Its present habitat is very limited ; it only grows on one range of mountains, which runs about 40 miles in a north and south direction, and the belt is not any where 10 miles thick. It is not at all improbable that the *Bunya* may supply large spars for ships of war, when the supply of New Zealand Kauri is exhausted, which will probably be at no distant period. The young plants have been much sought after by the settlers, but they have generally been treated so roughly, that they have died after their removal. The tree will probably be very handsome when grown by itself, as it will then be covered with its slender branches down to the very ground, just as the Cedar of Lebanon is in England, and the Norfolk Island Pine in the gardens of the colony at the present time.

A large fruited species of *Solanum* grows in some parts of the colony, which would be well worth culti-

vation for the same purposes as the Cape gooseberry, which it resembles in taste, but is almost four times as large.

There are four species of raspberry, natives of the colony; one or perhaps two of them produce very good fruit, which would be doubtless much improved by judicious cultivation.

The native plum, *Achras Australis*, produces a large purple fruit, which is eaten by the aborigines; it is rather disagreeable to most European palates, being very rich, without any flavour or acidity: it might be a useful fruit if cultivated, and might supply the place of its West Indian allies, the star-apple and the sapote.

EXOTIC FRUITS.

The climate of Australia is particularly suited to the growth of the more delicate European fruits; several are also common in cultivation, which are almost unknown in the mother country.

The peach and nectarine seem to thrive in New South Wales, as if it had been their native climate; nothing can surpass in excellence a good English peach ripened in the brilliant sunshine of Australia. Several varieties have been introduced from China; as peaches these are not good, but are worth a place in the garden on account of their precocity. The early Chinese, early English, and late American varieties, produce a succession of fruit for nearly five months in the year.

The Apricot does not bear so well as the peach, and is not therefore so much cultivated. It is quite as good but not better than it is in England. Green apricots

make a sort of gooseberry-fool, which is very consoling to those who cannot get the latter fruit.

Plums and cherries do not thrive so well as in England, except in the elevated parts of the country. Persons who take out plants, should endeavour to procure the varieties of those fruits which are cultivated in the south of Europe, and which would probably stand the heat of a warm climate.

Apples and pears grow very well, except in the immediate vicinity of the sea. The finer kinds are equally as good as they are in England, and in the more inland and elevated portions of the colony bear profusely.

The grape is much superior in richness to the grape ripened in English graperies. They are cultivated in the colony without trouble, and the produce is abundant. In ordinary seasons they will become raisins on the vines, if the birds are prevented from destroying them.

Figs are as fine as they can be in any part of the world; they also will dry on the trees if allowed to do so. Those who have never been out of England, can form no idea of the excellence of the fig in Australia.

Gooseberries, currants, and raspberries will not grow except in the cool elevated regions in the southern part of the colony. Sydney is supplied with green gooseberries from Van Diemen's Land. Strawberries bear abundantly in ordinary seasons, but fail when there is a long continuance of dry weather.

Melons and water melons of almost every variety are common; the latter are very abundant in the market during the season.

Oranges and lemons are grown without difficulty, where the soil is heavy; they do not thrive at Sydney, on account of the sandy soil. In favourable situations, they are as fine as can be wished. One man has made as much as £1,500 per annum from three acres of orange garden.

The Mandarin orange, a celebrated Chinese fruit, is said to be better at Sydney than it is at Canton. It is a very beautiful dark orange coloured fruit, with a highly perfumed rind, not thicker than brown paper, and not adhering to the pulp, which is exceedingly sweet, and of a different flavour to any other orange.

The Loquat is, except the peach, the most common fruit in the colony. It is a native of China and Japan, and in those countries is considered a first-rate fruit. The good varieties are excellent, but no care is bestowed on the propagation of good sorts; and as the seedlings vary quite as much as seedling apples, good loquats are rare to be met with in the colony. The tree is very handsome, with leaves a foot long; the flowers are produced in the winter, and are highly odoriferous; the fruit is often as large as a yellow plum, which it much resembles in appearance, and is produced in bunches about a foot long and wide.

Quinces are very common, and the cheapest fruit in the markets.

The Olive flourishes on the sea coast, and produces abundant crops; unfortunately no one has attempted to cultivate the plant on a large scale, but in a few years Australia ought to supply herself with olive oil.

The Mulberry thrives so well, as to induce a hope

that silk may at some time be reckoned among the valuable exports.

Pine apples at Sydney require the protection of glass, or they will not bring their fruit to perfection, although they continue to live for years in the open air. At Moreton Bay they are now commonly grown.

Nuts.—No sort of nut has hitherto been found to grow so easily as to encourage its cultivation. It is probable that some kind of almond may be found to thrive, when more have been imported.

The Lechee and the Longan, two celebrated Chinese fruits, grow at Sydney, and produce fruit every year. The climate there is, however, evidently too cold to allow the plant to grow luxuriantly. There can be no doubt, that the climate of Moreton Bay, or even of intermediate parts of the coast, will suit it well, and in time Sydney will be supplied with these and many other tropical fruits from the northern ports.

The Mango grows at Sydney, and has twice produced fruit, but the climate is too cold. This plant will thrive also at Moreton Bay.

Guava.—The different species and varieties of guava may be cultivated on all parts of the coast line north of Illawarra. They produce abundance of fruit, but the plant is not common. The purple or Cuttley's guava is a very hardy plant, and deserves to be extensively cultivated. It bears vast quantities of fruit, which are quite as good as strawberries, and by most people compared to them.

The Pedanga, a Brazilian fruit.—A species of *Eugenia*, often bears fruit at Sydney, but is not much

sought after, in consequence of the uncertainty of its crop. It is a very beautiful fruit, like a tomato in shape and colour, but almost transparent. In Brazil it is used to make a very favourite sweetmeat.

Eugenia Mitchellii, a plant very common near Rio de Janeiro, produces abundantly, and the fruit, which is the size of a large cherry, is very good. At present there are but two trees of this species in the colony, but it will doubtless soon become common.

The Granadillas of South America have not been introduced, except in the instance of the small purple species (*Passiflora edulis*), which is the worst fruit of the family; it, however, thrives, and annually bears large quantities of its acid strong-scented fruits.

The Cape gooseberry (so called), *Physalis Alkikingi*, grows wild in many parts where it has escaped from gardens. It is a very useful plant to new settlers, because a crop of fruit may be procured from it six months after it has been sown. There are two native species of *Physalis*, the fruit of which may be used, but they are not so good as the garden plant.

The *Banana* sometimes produces fruit at Sydney; it thrives well at Port Stephen, and about 100 miles further off; it may be grown in any quantities without difficulty. The Sydney market is supplied at present from Brisbane Water and Port Stephen.

The Cherimoyer, a Peruvian fruit, reckoned one of the finest in the world, grows readily at Sydney, and produces good fruit. It will no doubt be more cultivated in the northern parts of the colony. At Sydney it is about as rare a fruit as the peach is in England,

but does not require any artificial means to bring it to perfection. The plant takes the form of a large rambling bush, with leaves somewhat like those of the white-heart cherry. The fruit varies greatly in size, and is of an irregular heart shape. Large specimens may sometimes weigh two pounds; it is covered with a thin skin, which is filled with a white pulp of the consistence of custard, and tastes like cream and sugar, and is one of the richest and most delicious fruits that can be imagined.

CHAPTER V.

BREEDING AND MANAGEMENT OF LIVE STOCK.—HORSES.—
HORNED CATTLE.—SHEEP.—SWINE.

THE facilities afforded by the goodness and abundance of the natural grasses, and the steady though gradually declining price of meat, have contributed to advance the grazing and breeding of live stock in the colony, especially in the hands of a few intelligent individuals, to a much greater degree of improvement than its agriculture; the system pursued by many of the stock owners is still, however, very rude and imperfect.

Breeding horses is a very profitable occupation of capital, but cannot be attempted by any new settler with a prospect of full success, until he has sufficient number of enclosures formed to class and divide his stock in a proper manner. The breeding mares, entire colts, geldings, and fillies should all be kept separate, in secure enclosures, otherwise the fillies will take the horse, and the colts will cover, at too early an age, which will greatly check and impede their growth. The colts will also drive the geldings about, and frequently do them serious injury. It is the practice with many breeders to allow the horse to run with the mares in the covering season, which is certainly attended with many advantages, as the mares then never take the

horse unless when nature prompts them, and it is very rare they miss breeding. Others keep their horses stabled, and bring the mares to them at regular intervals of nine days, until they refuse the horse; but in this way they very often miss breeding. Every person who breeds horses to any extent, should endeavour to keep an entire horse of his own, otherwise the expense of hiring the service of a horse will run away with a good part of his profits. Those, however, who have any valuable mares, will do well to send them to the best horse they can, without regarding the expense. The climate seems peculiarly congenial to the breeding and improvement of horses; they are subject to few diseases, and the mares, if well kept, breed very regularly to an advanced age. Horses kept in towns are principally fed upon maize and bran; they are seldom allowed hay, which is dear, and not always to be obtained; but in lieu thereof the coarse grass, produced in the neighbouring woods, which is brought into Sydney by people who make a living by procuring it; this is, however, a very poor food, and a wretched substitute for hay, especially in the winter. In the interior, horses are generally kept in enclosures, and fed upon the natural grass; those, however, that do much work, are allowed corn, either maize or oats, and are also frequently supplied with green oats or barley in the winter; but this is a poor washy food, and a bad substitute for good hay, for horses that work hard.

The horned cattle of the colony were derived from various countries, England, the Cape of Good Hope, India, and other places; and were bred with little dis-

crimination, they were necessarily of a very mixed description. About fourteen years ago, Mr. Macqueen introduced the superior Durham or short-horned breed of cattle at his estate of Segenhoe on the Hunter. The Agricultural Company also paid great attention to this breed, which has become the favourite horned stock of the colony. Many herds may now be seen which, although of greatly superior numbers, equal in excellence any found in England. In the long run, perhaps, the North Devon breed will prove superior as milkers and for working cattle, but at present the preference shown by the butchers for the Durhams is a strong inducement to the cultivation of that breed. It was formerly thought that superior English breeds would not thrive on the dry pastures of Australia, but experience has shown that the greater quantity of nourishment contained in the native grasses more than compensates for their inferior succulence, as compared with the English. Another evidence of the highly nutritive quality of the Australian grasses, may be shown in the extraordinary journeys performed by horses without any food, except the few mouthfuls of grass they contrive to snatch in passing. Sixty miles a day is thought a very moderate journey on a fresh horse; and there are many instances of a horse having travelled ninety miles in the same space of time without rest, except for a few minutes where water may be found.

Very few of the stock owners have sufficient land to support the whole of their stock, and are therefore obliged to have recourse to the unoccupied tracts in the interior. When any person finds himself overstocked—

and very few make the discovery, or, at any rate, will take measures to remedy the evil, until their cattle are half starved—they go into the interior, or *bush*, as it is termed, beyond the occupied parts of the country, usually procuring the assistance of some of the black natives, as their guides. Having found a place suited to their purpose, with abundance of grass, well supplied with water, and, if possible, with natural boundaries, such as thick brushes, rocky creeks, or impassable mountains, they then make application to the Local Government for permission to occupy the same, describing its situation, boundaries, and the name by which it is known among the natives; this permission, or *ticket of occupation*, as it is termed, is always granted upon paying a trifling fee; and conveys to the stock owner a right to occupy a tract usually extending two miles in every direction from his stock yard; always, however, holding himself in readiness to quit at six months' notice from the Surveyor-General, should the land be wanted for the purpose of colonization; and also prohibited from cutting down or removing any timber, except what may be required for stock yards or huts. This ticket of occupation system has been of material advantage to the stock owners, by giving them the free use of the natural pasturage at a cheap rate; but it has also been attended with many disadvantages. The occupation of the country, by new settlers, has of late years been so rapid, that the graziers have found themselves continually impelled further on into the interior; and thus their flocks and herds have become every year removed to a still greater distance

from home; the necessity of their occasional personal superintendence imposes upon them the obligation of undertaking long and toilsome journies, with all the disagreeable consequences of absence from their principal concerns, and privation of domestic comforts. The expense, also, of sending the necessary supplies to their shepherds and stockmen, at such a long distance, becomes a very serious matter; while the uncertain tenure on which they hold the land, hinders them from enclosing and cultivating as much as would subsist their people; and at length, when they are compelled to remove, to make way for new settlers, the latter find the pasturage ruined and exhausted. The government have lately, however, come to a resolution, to sell lands on very reasonable terms; the large stock owners will therefore be able to purchase as much as they may, or at least ought to require, for their own use; and they will probably see the necessity and advantage of keeping down their flocks and herds to the number their own lands will be able to support, and not spread their establishments all over the country, as some of them seem disposed to do at present.

In taking possession of a tract of land, or grazing *run*, as it is termed in the colony, the first thing to be done, is to erect a secure five-railed stock yard, with strong posts, sufficiently capacious to contain the whole herd, with proper divisions for drafting off any portion, should it be required, for market or any other purpose; and a small pen for young calves. A bark hut is also erected, for the residence of the stockmen. The cattle are then brought to the place, and for the first few days

herded together, and enclosed in the stock yard at night; when they seem pretty well reconciled to the place, they are left or *bedded* out one night, and *yarded* the next; then yarded twice a week, afterwards once a week, till at length they are left out altogether. Some people make a regular practice of having their herds brought in at regular intervals, and it is certainly very advisable, as it keeps them more under subjection, and prevents their getting so excessively wild, as many do that are allowed to remain out at times for months together, without being brought into the yard. Cattle once accustomed to a run in this kind of way seldom or never stray from it, during the time the pasturage affords them sufficient food. Unless frequently yarded, however, they get very wild and shy, and will rarely allow a man on foot to get near them, but may always be approached on horseback. Of course, cattle kept in this way cannot be bred with much care or discrimination; the bulls are allowed always to remain in the herd; the heifers take the bull at a very early age, and frequently produce calves at sixteen or eighteen months old; the male calves, not intended to be kept for bulls, are castrated at from two to six months old, but are frequently allowed to run much longer, and injure themselves greatly by beating about after the cows and heifers when bulling. If a person goes to the expense of procuring the best bred bulls he can obtain, he is very liable to be annoyed, and materially injured by inferior animals belonging to other persons who may have herds in his neighbourhood. The cows also are dropping their calves the whole year round, and many

in severe seasons have great difficulty in rearing their calves; very few are ever milked, except, perhaps, two or three for the use of the stockmen, and sometimes when the cows happen to be flush of milk, and have more than the calf can take, the loss of part of their udder is the consequence. In some few instances, the calves are shut up and suckled twice a day for a short time, but in most cases they run with their mothers from the moment of their birth, and frequently are not weaned till a very advanced age; some people, however, do take the trouble of attaching a small board to the cartilage of the nose, to prevent their sucking, at about seven months old. The only thing that can be said in defence of this system of breeding cattle, is, that it is perhaps the best that could be adopted in an open unclosed country, where the cattle have increased faster than it was possible to make inclosures for them. Some few persons, who have very large herds, have so far improved upon this plan, as to divide their cattle into three portions, keeping their breeding herd at one place, their bullocks at another, and their heifers at a third: this division, when it can be effected, is very desirable, as the bullocks feed more quietly, and fatten better, when left to themselves; but it is very difficult to find a place for the heifers so secluded, that bulls cannot get access to them; and in this case, as the strange bulls may be of an inferior description, the remedy is worse than the evil. The expense attending a herd of cattle is very small; two men being sufficient for the care of five or six hundred, and, unless the distance is very great, two or three journeys in the year will be sufficient

to convey the supplies of provision and necessities requisite for the herdsmen; these men, at least the principal ones, are generally free men, hired at about £25. per annum, besides their ration of meat and flour; they are usually allowed the use of a horse, keep a number of greyhounds, and pass the greater part of their time in hunting the kangaroo, emu, and native dog, and make a considerable profit of their skins. Of course their cattle are frequently much neglected, and suffered to wander about at will, over a wide extent of country: and the herdsmen very often do not see the whole of them for months together. Many of these people are much attached to their way of life, which, though secluded and lonely, affords them full opportunity of gratifying their vagrant and idle habits, and that passion for the pleasures of the chase so common to human nature. Hunting and smoking tobacco are the principal occupations of a stockman's life.

No doubt can be entertained that cattle kept in inclosures, managed under a proper system, and put to the bulls at such a period that they should all drop their calves in the spring of the year, would be more profitable than double the number suffered to range at large in the manner above described; especial care must, however, be taken, that the pastures are not overstocked, as in this colony the graziers have no artificial resources to fly to for assistance in scarce seasons. The cattle kept about the residences of the settlers, are managed more or less after the above plan, according to the state of improvement their farms have arrived at, and the progress that has been made in inclosing them.

Some persons cause their stock to be followed by the stockman through the day, and shut them up in yards at night; but this plan, unless the result of necessity, is a very bad one, the cattle, especially during summer, feeding to most advantage in the night, when the dew is on the grass. Others follow them through the day, and shut them in paddocks or large inclosures at night; this is a much better plan, allowing them the liberty of feeding in the night, and securing them from straying. Others again have got their lands completely enclosed, and divided in such a manner as to be able to shift their stock properly upon it; these persons can improve and breed their cattle securely, provided they take care to understock their land; but the reverse is too often the case, many stocking their pastures to the extent of what they will bear in plentiful seasons; and the consequence is, that in scarce times they are short of food, and frequently perish from want, or perhaps have to be driven away into the interior, in a weak and exhausted state, when numbers die upon the road; and those which do survive, even under the most favourable circumstances, are a long time before they recover their flesh and strength. Every person ought to regulate his quantity of stock by the number his land will support in the worst seasons; he would then always have plenty, and escape the deplorable consequences attendant upon overstocking. This again brings me to urge upon every man the necessity, as soon as he is able, of making hay, or providing some other resource against adverse seasons. Plentiful times frequently occur, when the land will bear, for many months, or even two or three years

together, five times as much stock as it will at others : unless at these times, therefore, sufficient stock is kept to consume the grass, a great deal of feed will be wasted, and the pastures much injured ; but then, unless the farmer provides artificial means, he will have no resource against the return of scarcity ; his only safe plan, therefore, is to keep his land constantly understocked. Making hay in this climate is attended with very little labour ; I have cut grass in the morning and carried it at night ; and have rarely had occasion to let it remain abroad above twenty-four hours ; indeed very great care is necessary not to overmake it. I have generally found it sufficient to tedd it from the swath, rake it into winrows, turn two of these together, and carry it immediately.

The prices of horned cattle, vary according to their breed, but have been gradually declining for several years ; in fact, from their first introduction. Good dairy cows are still in demand ; about £12. or £14. may be stated as their average value ; four-year-old bullocks, fit for the butcher, and weighing seven hundred pounds each, often fetch ten guineas. Cattle are, however, to be had at all prices, but the settler will find it to his advantage to purchase from a well-improved breed, even if he pays rather a higher price. Handsome young bulls of the most esteemed herds will fetch twenty-five or thirty guineas, or even £100.

Dairying has, by a few individuals, been much attended to of late years, and some cheese produced of a quality very creditable both to them and to the colony. The systems followed are very various ; the

farmers, coming from different parts of the United Kingdom, naturally adopt that plan they are best acquainted with. The management of dairy cattle is yet very defective; the rude manner in which most of the cattle are bred in the bush-herds rendering them wild and untractable; scarcely any will stand to be milked without being put into bails or bilbows; the greater part are much addicted to kicking, and very few can be milked without securing their legs. The establishing and breaking in a good herd requires a considerable degree of patience and perseverance; very few really good milch cows are to be obtained by purchase; and most new settlers will find it necessary to buy heifers and break them in themselves. The system unavoidably pursued by many persons, also tends to make the cows bad milkers and crafty. On all new farms a considerable time must elapse before sufficient land can be fenced, to form enclosures large enough to afford pasturage for the dairy cows; and even if small enclosures could be made for the calves, so as to separate them from their mothers, the latter would be continually hanging about the fence, and could never be habituated to go quietly to their feed, while they could both see their calves and hear their bleatings; the plan, therefore, most usually adopted, is to keep the calf penned up for about six weeks, and to allow it to suck as much as it can every morning and evening. If the cow has more milk than the calf can take, she is clean milked after the latter has done sucking. At the end of this time they will begin to feed; they are then turned out with their mothers in

the day time, penned up at night, and the cows turned out to feed :—in the morning they are brought in and milked ; but very few will give down the whole of their milk, and some none at all, without the calf being let to them, just to draw the milk into the speans ; by this system, the calf gets half the milk, and the quantity obtained from each cow seldom exceeds three or four quarts every morning. A considerable loss is of course experienced when the calf gets the whole of the day's milk ; but, on the other hand, it is a sure way of rearing fine stock. Some persons, whose farms are enclosed, turn the cows and calves into separate enclosures, and milk the cows twice a day, only allowing the calves to suck as much as will cause the cow to give down her milk ; this plan, however, pinches the calves, and checks their growth ; and where they have nothing but the natural grass to eat, is certainly not a good one. If some small enclosures were carefully laid down, with good and nutritious grasses, or the calves had any other artificial assistance, it might do very well. Some have attempted to raise calves by hand, with only skim milk ; but though this plan may have partly succeeded—and I have tried it with success to a limited extent myself, for the last two years—yet I am fully persuaded, that no good calves can be reared with the mere natural grass and skim milk ; and that unless the farmer has first obtained some good cultivated grass, linseed, good hay, or other artificial food, any premature attempts of this kind will only be attended with loss. It is, however, probable, that when a farm is completely enclosed, and got under a proper system, it may

answer very well to separate the calves from the cows at an early age, and either rear them by hand, or suckle them for the butchers, particularly if the plan was tried on young heifers, at their first calving: very few old cows, that have been accustomed to have their calves run with them, can ever be brought to give down their milk without the calf being let to them. It is a circumstance not easily accounted for, that there does not exist any great demand for veal; perhaps it may be owing to the impossibility hitherto of procuring the article of good quality; the expense of rearing stock, even in the neighbourhood of Sydney, was so trifling, and the natural grass of so little value, that few persons would sell their good calves, unless at a higher price than the butchers could afford to give.

Horned cattle are subject to few diseases in the colony, unless allowed to suffer from poor keep; they are sometimes effected with giddiness in the spring, when the weather begins to get warm, and the grass is young and full of juices. I have always found that copious bleeding, and confinement to a dry pasture, effects a speedy cure. Cows, especially in dry seasons, are very subject to sore teats. The heifers, unless prevented, will breed very young, and the cows breed very regularly to an advanced age.

The perfection to which the breeding and management of sheep has been brought in New South Wales, may justly claim the admiration of every friend to industry, and every lover of his country. In this branch of rural economy it is, that the greatest and most decisive improvement has taken place, since to

this object the whole attention and energies of the most wealthy and intelligent men in the colony have been for several years directed.

The principal part of the original sheep stock were derived from India, a very unsightly and diminutive race, covered with long coarse hair, and more resembling the goat in appearance. By degrees this unprofitable breed was ameliorated by crossing with sheep from Ireland, England, and other places; and it was even found, that from the effects of climate, in two or three generations, without any admixture of the breed, their covering began to assume the appearance of wool, and to retain less and less the character of hair. At length the real Merino breed was introduced by Mr. Macarthur and others. From this time the improvement has been every year more considerable; and within the last few years, a great number of Merino and Saxon sheep have been imported by different individuals; the price of rams has fallen in consequence, and they are now within the reach of the poorest breeders. The progress of improvement will therefore be much more rapid than heretofore, and it may be safely anticipated, that in twenty years more, nearly the whole sheep stock of the colony will approach the perfection of the Spanish breed. The greatest facilities are presented for the attainment of this object; the climate dry, and free from noxious damps and fogs; the soil, more especially in the interior, sound and firm, covered with an abundance of nutritive grass and herbage; the country also open and clear, admitting a free circulation of air; all combine to render

the country peculiarly adapted to the constitution of the animal.

The greater part of the sheep, like the horned cattle, are kept in the interior, upon lands held under tickets of occupation; they are kept in flocks of about 300,* each having its separate shepherd. Wattle or hurdle gates made of split wood, with five bars, are used to inclose them at night. Three flocks are folded near to each other under the care of a watchman, whose business it is to watch them all night, to prevent any from being stolen, or injury from the native dogs, and to shift the folds every day. The watchman is provided with a moveable watch-box, and usually two or three dogs, and generally keeps up fires all night; and if he is at all attentive to his duties, there is very little apprehension to be entertained of any loss. The watchman counts the sheep into the fold at night, and each shepherd counts out his own flock in the morning; so that if any are missing, it is easily ascertained whose care they were in at the time, and a proper enquiry can be set on foot. Great care is requisite to see that the folds are shifted every day, as it both tends to keep the fleeces clean and to preserve the sheep in health. Some few persons still continue to enclose their sheep in yards at night, but the practice is very reprehensible; it is impossible to keep the yards clean, even if carefully swept every day, which is not always the case. An idea was once prevalent, that it was dangerous to turn the sheep out in the morning till the dew was off the

* The scarcity of shepherds now occasions as many as 1000 or 1200 sheep being put into a flock.—ED.

grass, but most of the graziers are now convinced there was no solid foundation for that opinion, and get their flocks out as soon as possible, and keep them out till dark. In the heat of the summer, when the flies are troublesome, the sheep will not feed in the middle of the day, but draw up into compact parties of fifty or sixty under the shade of the trees ; in this state it is necessary to cause them to be moved occasionally, otherwise those inside get heated so as to endanger their health. Where the numbers will admit of it, the sheep are divided into the ewe flock, lamb flock, and wether flock ; and where the stock is extensive, they are further subdivided into two-year-old wethers, three-year-olds, &c. ; and in classing and dividing them into flocks, regard should also be had to the quality of their fleeces and state of improvement. The general time for putting the rams into the flock is in the month of October, but in some districts somewhat later, according to local circumstances ; the rams are usually allowed to continue in the flock about six or seven weeks. The lambing season commences in March ; and during its continuance, the constant care and superintendence of the owner or some very trusty person is requisite. It is a good plan to erect a temporary bark shed to shelter the newly dropped lambs for the first few nights, and also to keep them and their mothers about the fold for a few days, until their strength will enable them to follow the flock through its daily walk as usual. Some difference of opinion formerly existed as to the propriety of lambing down in spring or autumn, but most breeders seem now agreed that the latter is

the preferable season. The rains in autumn usually commence in February, and a second spring immediately takes place. The grass grows up rapidly, and the most plentiful season for feed is generally the month of April. The winter is not much felt before June, and by that time the lambs, if dropped in March, will be strong and able to bear its severity. This plan was first adopted in the lower and warmer parts of the colony, where the winters are short and mild ; and it was found possible to lamb upon the plentiful grass of autumn, and wean upon the young grass of spring : but in the colder and more elevated districts, it is frequently necessary to yearn the lambs in the month of August, or early in September, before there is any shoot in the grass ; and this is the worst consequence attending the autumn lambing. But it certainly has great advantages : the heats of summer come on so rapidly, that the spring-weaned lambs were much weakened ; and it has been found by experience, that winter reared lambs will make the most healthy and strongest stock. In feeding sheep, it is requisite to see that they are fed out from the folds in the morning, in such a manner that they do not go over the same ground on two following days ; the more frequently their walk is changed the better will they feed, and consequently thrive more rapidly ; and to promote this purpose, it is very advisable to change the situation of the folds occasionally to some other part of the run. The more they are left to follow their own inclinations, and the less they are driven about, the better. The principal care is to prevent the shepherds from being over officious. Pro-

vided they are *headed*, or kept in the proper direction, and not suffered to feed on wet or unsound ground, they will seldom come to any injury. The shepherds will sometimes stray to too great a distance, either through heedlessness, or to answer some purpose of their own, to be able to return to the folds in due time, without driving and hurrying the sheep ; this should be carefully guarded against, as nothing is more injurious than to put them into the folds in a heated state. So that the shepherd can keep the whole of his flock in sight, the more they are allowed to spread the better they will feed. The native dog will sometimes get among them, even in the day time, especially in the lambing season ; but if ordinary vigilance is exercised by the shepherd, very little danger is to be apprehended from them. It is, however, very advisable to allow the shepherd an assistant in the lambing season, as it is impossible for him to look to every part of his flock, and attend two or three ewes that may be lambing, at the same time. The shepherds are sometimes attended by dogs, but their usefulness is very questionable ; and some graziers have prohibited their shepherds altogether from keeping dogs. The shearing season commences in October, and should be finished before the end of November, in all parts of the colony, except of the lambs, which may run a month longer. In the county of Argyle there is a kind of grass, with an extremely light seed-stem, which dries and breaks off towards the end of November or beginning of December ; care should be taken to shear the sheep before this happens, as it is readily carried about by the wind, and attaches itself so firmly

to the fleece, that it can never be separated afterwards, till the wool comes into the hands of the manufacturer. The fleece is always washed upon the sheep's back, in some river or pond, and they are allowed a few days to get completely dry, and for the yolk to rise again before they are shorn. Considerable difficulty is sometimes experienced in obtaining good shearers, and every person will find it to his interest to cause as many of his servants as possible, to be instructed in this art, which they are generally very desirous to learn. I have always made it a practice, to cause any sheep that were to be killed, to be first shorn by a man that was a stranger to the art; and when any happened to die, to cause their wool to be taken off in the same manner; by this means I have instructed, and made good shearers, several that never had a pair of shears in their hands before. When this work is performed by hired hands, the usual price is 3s. 6d. per score.

Sheep are subject to few diseases in this country, if properly attended to. Flukes in the liver sometimes occur, but the rot is nearly or perhaps quite unknown; the foot-rot is also unknown; but the foot-halt, from a small worm or maggot which insinuates itself between the claws, occurs occasionally; at a proper stage of its growth it may easily be removed, by working the claws about backwards and forwards. The scab, where the sheep are badly kept, and the pastures overstocked, or where they are fed or folded upon wet land, and proper care not taken to shift the folds every day, very frequently makes its appearance, and is sometimes very difficult and troublesome to eradicate. I have found a

strong decoction of tobacco in brine, with about one pint of spirits of turpentine added to every gallon, and, in extreme cases, one quarter of an ounce of corrosive sublimate, in the like quantity, to be, if carefully applied, a safe and effectual remedy. Blindness, occasioned by the formation of a scum over the eye, is very common, but may always be removed by lump sugar and calcined alum, in powder, blown into the eye with a quill. Sheep also frequently become what the shepherds term broken-winded; it is a morbid state of the lungs, in which the cavities and vessels grow up, and the process of respiration is carried on with difficulty; it may be discovered by the panting of the animals, and their wasting in flesh, through not being able to feed properly; there is, probably, no cure for it, and the best way is to kill them for meat as soon as possible. It probably arises from their being too much crowded in their fold in hot nights, or from being overdriven and heated.

Sheep kept in the more cultivated parts of the country, and about the residences of the proprietors, are managed much after the system above detailed. Folding is not much practised with any view to manuring the land, many proprietors being of opinion that it is injurious both to the sheep and their fleeces to fold them upon cultivated lands; and that feeding them upon turnips breaks their teeth and injures their mouths, and by preventing them from feeding to advantage, disposes them to premature decay; it being common in this colony to keep ewes as long as they will breed, in fact, until they die of old age. But these objections do not apply to folding sheep upon clover

leys, previous to sowing them with wheat, which would be a most beneficial practice ; nor to the case of feeding sheep intended for immediate sale, upon turnips. As far as I have tried folding sheep upon turnips, it fully answered my expectations ; they ate them with great avidity, and the benefit to the succeeding crop of barley was very great ; the manure, however, should be ploughed in as soon as sufficient land has been gone over for a day's ploughing, otherwise, if the season be dry, a great part of the manure will be evaporated, and its beneficial effects dissipated and lost. It may be safely stated that folding fatting sheep upon green crops would be the greatest improvement that could be introduced into the agriculture of New South Wales.

It may perhaps be expected, that I should here give some calculations of the profits to be expected by embarking capital in sheep grazing ; the usual returns are undoubtedly very considerable, and probably exceed those to be obtained from any similar way of employing money at present open to the public : but, without meaning to question the general correctness of some that have been already laid before the public, I must confess that I have little faith in calculations of that description, as, after all, the realization of the expected gains must depend upon the care, activity, and judgment of the undertaker, and a single error may entirely frustrate all his brilliant hopes. Persons acquainted with such subjects, will be easily able to make their own estimates from what has been stated in the course of this work. The system of sheep grazing here described is probably the best that could be adopted in

the present state of colony, and while the natural grasses are the only resource depended upon for supplying the sheep with food; but it requires an immense tract of country to carry it on to any extent; a flock of three hundred requiring at least a thousand acres of good natural grass to supply them with food at all seasons. The extent to which it may be carried is certainly very great, but it has been always found, that the fleeces of sheep, when carried within a certain distance of the equator, have invariably lost the character of wool, and gradually assumed that of hair; what that limit may be in New Holland remains yet to be ascertained.

The breeds of swine are very mixed, but many of them very good. Some persons enclose a piece of ground with secure paling and turn their swine into it in the day time, and bring them into the yards round the barns at night; others that have tracts of swamp or rough land in the neighbourhood, cause them to be followed by a swineherd through the day and brought in at night; others, where the country is not much cultivated, let them remain out in the bush without seeing them for perhaps several weeks together. Wild yams and other roots afford them subsistence, especially in swampy places; but in the neighbourhood of cultivated lands, this practice is frequently attended with mischief and disagreeable consequences. In seasons when the maize crop is abundant, a great quantity of very fine pork is fattened upon that grain, which is given to them whole; in the higher districts peas are much used; as also potatoes, rye, and barley, which are given in a

boiled state, it being impossible in many situations to get the grain ground. Drake, which is very common among wheat, is also used in the same way, and is a most forcing food for hogs. I have always used boiled food for fattening swine, and found it answer as well as if ground.

CHAPTER VI.

VARIOUS METHODS OF CLEARING LAND.—FENCING AND
ENCLOSING.

For many years succeeding the first settlement, the colonists were unprovided with any working cattle, and the use of the plough was consequently unknown. The scarcity of provisions, and the state of famine, to which they were often nearly reduced, also prompted them to endeavour to obtain some return from the land they attempted to bring into cultivation, as quickly as possible; hence they naturally fell into the system of stump falling, or cutting down the trees at about a yard from the ground; and having burnt off the stems and tops, broke up and cropped the land without regarding the stumps, which, as the plough was not used, and the hoe was the only implement of culture, were not much in the way. By degrees working cattle multiplied, and the plough was gradually introduced; still, however, the old way of clearing the land was persevered in, habit having reconciled the settlers to the unsightly appearance of the dead and naked stumps, and to the inconvenience of working among them. The price of labour too was high, and the expense of removing them was greater than many of the settlers, who were in indigent circumstances, could bear. At length

labour became more plentiful, and the colonists began to clear their lands in a better manner, and also in many instances to remove the old stumps which had so long encumbered the soil. Various ways of effecting these objects were adopted by different individuals, according as local circumstances or their own judgment pointed out. These several methods of clearing land I shall now endeavour to describe.

Perhaps the most expensive, but certainly the most effectual, way of clearing land is to grub the trees up by the roots; this plan is best adapted to the more open parts of the country, where the trees have short bodies, and wide spreading tops; where the roots generally spread more immediately under the surface, and do not run down with many tap-roots perpendicularly into the soil. The best season for grubbing is in the winter, when the ground is soft and moist, and strong winds prevail. One man in that season will do more than three will in the summer, when the ground is hard and the weather calm. The earth should be thrown out all round the tree for the breadth of about a yard, so as to lay the roots completely bare. The labourer should then commence on the leeward side, cutting off every root close to the tree, and again at about a yard distant; or if they are large, and lie near the surface, following them out until they are so deep as to be out of the way of the plough; proceeding in this manner, and taking care to clear his work after him, by throwing out the earth and rubbish, round to the windward side. If the wind is brisk at the time, its force, acting upon the top, will generally bring down the tree, breaking the tap-

roots, before the lateral roots are well all cut off. The woolly gums are the most difficult to grub, as they have generally a second row of roots all round under the first, and the labourer will usually have to go twice round them before they will come down. The only tools required in this operation are a spade, axe, and grubbing hoe. When the trees are down, they should be cut up as soon as possible, while the wood is green and soft; lopping off the small boughs and limbs with an axe, and cross-cutting the principal limbs and stem, if long, with a saw. They may then be suffered to lie and dry until the month of September, when they should be got together in large lumps and burnt, and the ground immediately broke up, to be ready for sowing wheat the ensuing autumn. The larger the lumps, and the more compact and close to the ground they are made, the sooner they will consume. Open forest land in the county of Argyle may be completely cleared, and got into a fit state to admit the plough, in this manner, at an expense of about twenty-five or thirty shillings per acre.—Another plan is to stump-fall the trees, and then to open out the stump all round, so as to expose as many of the roots to the air as possible, at the same time *sapping* the stump, as it is termed, that is, cutting off about a hand's breadth of the bark all round, as low down as possible. Stumps treated in this way, and suffered to remain two or three months, will get very dry; some large logs and smaller wood are then piled round in a triangular manner, so as to bring them in as close contact with the stump as possible; they are then set on fire, continually attended, and supplied with fresh

fuel until the stump is consumed. Some trees burn much better than others; and where they are good burning woods, the destruction of the stump is easily effected in this manner. In the heavy timbered forest lands of the county of Cumberland, this plan is now much followed with great success; care must, however, be taken that the root is consumed sufficiently low to be out of the way of the plough. Another plan, is to stump-fall the trees as before, then to open out the stump, and place some dry wood in all round it; then to *sod it up*, that is, to completely cover it with turf, leaving only a small hole on one side to put in some fire; this plan requires a good deal of attention; the fire will sometimes expire, and in some cases, if covered up too close, will convert the stump into charcoal. Where, however, it is skilfully performed, it will sometimes completely destroy the largest stump, burning it down into the roots a considerable distance. This plan has been much followed in eradicating the old stumps remaining in lands that had been cleared some years; these could not be burnt out without bringing wood to them, which would be a work of some difficulty, as, from the destruction of the forests, there was frequently none very near at hand; but by grubbing the smaller stumps, and using the wood to set fire to the larger ones, the whole were easily eradicated. Grubbing large stumps is a most laborious operation, and is attended with much more trouble and difficulty than grubbing the tree in the first instance; the weight of the top at that time assisting to break off the tap-roots, and after it is down, by filling up the hole, the whole

tree is completely brought to the surface ; whereas in grubbing a stump, even after all the roots are separated, the raising the stump out of the hole is an operation of no little difficulty, and must be accomplished before it can well be burnt. Some persons have preferred digging a deep hole on one side, and by throwing the stump down into it, have succeeded in burying it out of the reach of the plough ; others have taken off a belt of bark all round the tree, and killed it while standing, afterwards clearing the land by grubbing or stump-falling. This is attended with some benefit, as the tree is then ready for burning as soon as it is down, but then the wood gets hard and dry, and is much more difficult to cut up. Some have barked the trees, and set fire to them standing ; many will completely burn down, but a great many stumps and fragments will remain, and require as much or more trouble to be got rid of, than the whole tree would in the first instance ; and it does not appear that much benefit arises from the system. Upon the whole it may be safely concluded, that the best plan is either to grab up the trees by the roots, or, where the woods are of a good kind to burn, to stump-fall them, and burn out the stumps. Some persons have an objection to grubbing, where the land is poor and gravelly, as it brings too much of the sterile substratum to the top ; in these situations, burning out the stump is certainly the preferable plan. The expense of clearing land it is very difficult to give, with any degree of precision ; perhaps when performed by hired labourers it may be about £2. 10s. or £3. per acre, in the forest lands of the county of Cumberland.

The quantity of dead wood lying about every where upon the surface in forest lands, greatly disfigures the country, giving every part a littering and slovenly appearance; it also materially injures the pasturage, preventing the stock from feeding regularly all over the surface; and tearing and injuring the fleeces of the sheep. Some proprietors have caused it to be collected and burnt; the expense of this improvement may be about 2s. 6d. to 3s. per acre, and where it can be effected it is very desirable.

Considerable tracts of land have been cleared by some farmers for the mere purpose of grazing, without any intention of breaking up land for tillage. It is, however, contended that this practice is useless, or even prejudicial, as the trees only afford a beneficial shade and protection to the grass; but there does not seem any good foundation for the opinion; the frosts have certainly more effect on the grass in open places than where it is covered with trees, but the food in summer is undoubtedly more sweet and nutritive, and the pasturage and free circulation of air more beneficial to sheep. Many people, also, in clearing tracts of this description, have left straggling trees, as they contend for ornament; but this practice does not seem founded either in correct taste or sound judgment. Lofty naked trees, with a few branches and scanty foliage at the top, can never be very elegant or beautiful objects, and afford no shade or shelter to the stock; while single trees that have grown surrounded by others in a thick forest, invariably become sickly and go to rapid decay, when exposed and left by themselves in this manner;

their limbs are continually dying and falling off, till in a few years nothing is left but bare leafless trunks. The better plan seems to be, to clear the old forest entirely away, and then to plant small clumps of exotics, or of trees indigenous to the country. Any mimosas, acacias, native cherries, or other trees that have a thick green foliage, and afford a good shade for the stock, should, however, be preserved; and care must be taken not to destroy all the wood and leave the farm without firing, as some over-zealous improvers have done.

Draining is very little practised; indeed in many parts of the country it is not much needed; open ditches to carry off the surface-water are generally all that is required. The sides of these should be formed with a considerable slope, as the force of water is so great in heavy rains, that it will frequently undermine and wash away the sides, and small ditches are by this means sometimes converted into immense gulleys. On Mr. John Macarthur's estate some very durable watercourses have been made, forming the ground into a slight hollow, and sowing the bottom with white clover: the roots form a perfect mat, and completely hold the soil together, allowing the water in the time of rains to flow freely over. Open dry ditches, kept free from vegetation, would perhaps be the most effectual plan that could be adopted to stop the progress of the annual burnings of the grass. Under draining is very seldom resorted to. I formed a very good one upon my own farm in the following manner: a ditch was dug eighteen inches deep, eighteen inches wide at the top, narrowing to twelve inches wide at the bottom; a pipe was then cut

at the bottom of this with a narrow spade, six inches broad and four inches deep; over this some split logs or slabs of wood, six feet long, and of sufficient width to cover the pipe, were placed, and sods put in upon them, and filled up with earth; the expense was about 4*l.* per rod.

Irrigation has never yet been attempted; there are some few situations in which it might be practised; and the benefits that would arise from such an improvement, in this warm climate, would be immense; few persons, however, are yet in possession of sufficient capital to attempt expensive improvements of this nature.

Some few attempts have been made at paring and burning, and in some cases with much success. This operation should not be attempted except with due caution, as in some instances it is productive of injury; the staple is in many soils very thin, and will not allow any part of it to be converted into ashes, without doing serious mischief to the land. Earth and turf obtained from creek sides, and other places not in cultivation, may, however, be burnt, and converted into a most valuable manure, especially for turnip crops. In some places new lands that abound much in vegetable matter, and woody fibre, and when the staple is deep, may be pared and burnt to advantage. In the summer of 1823, I pared with a plough, and burnt part of the turf upon about three acres of new land; about one fourth of the turf was burnt, and the quantity of ashes obtained not more than twenty cart loads to the acre. The land had in all four ploughings, and was

then sown with turnips ; the crop was perhaps one of the finest ever seen.

Fencing and enclosing land, is the greatest and most important improvement that can be effected upon it ; to the acquiring a proper knowledge on this subject, the attention of the new settler should be early and closely devoted, since, without doubt, it is the foundation and basis of every other improvement to be afterwards expected. Enclosing with post and rail fences of split wood, has been brought to a very considerable degree of perfection in this colony ; and is executed in a style of great neatness and stability. This work is usually performed by free men, who have acquired the knowledge of this branch of rural labour since their arrival in the country, very few common labourers from any part of the kingdom being at all acquainted with it. The prices at which it is generally performed, are for four-railed 3s. 6d.; for three-railed 2s. 6d.; and for two-railed 1s. 9d. per rod. The best woods for the purpose are the blue-gum, iron-bark, stringy-bark, and box trees. The tools used in splitting are a cross-cut saw, scoring axe, set of seven wedges, and two mauls or beetles. In cutting out the mortices, a very singular tool, called a morticing axe, is used ; it has a short handle, large eye, head about a foot deep or long, and with an edge about an inch and a half wide ; some use them double headed, shaped like an adze on one side, and an axe on the other ; and this perhaps is the best construction.

In setting up, a common spade and a post-hole spade, are requisites for digging the holes ; and if there

are many stones, a small crow-bar or pick-axe will be useful in loosing them ; an adze or broad axe is used for trimming and fitting the rails for the mortice. When two men have agreed with a proprietor to execute a job of this kind, they go into the bush where timber is most plentiful in the neighbourhood, and if it is at a distance from any habitation, they usually construct a temporary hut for their residence while the job is in hand. They then select the straightest and freest grown trees, fell them with a cross-cut saw, cut them off to proper lengths, and billet them out into as many divisions as the size of the tree will admit ; they are then split or run out with wedges into rails or posts ; not from heart to bark, as is practised in splitting woods in England, but across the silver grain.

In the same manner are split, logs or slabs for building, rafters, joists, palings, and shingles, except forest oak shingles, which are split from heart to bark, or the same way as the silver grain. Posts are cut five feet six inches, and rails nine feet long. The mortices are cut quite through the posts, about four inches long, and two inches wide ; the ends of the rails are sometimes placed one over the other in the mortice, and sometimes one by the side of the other ; which last is much the neatest plan. The ends are trimmed away so as to overlap each other, and project through the mortice on both sides ; two pannels are invariably put up to a rod, and the posts are always sunk two feet in the ground, which allows the fence to be three feet six inches high.

In enclosing lands for cultivation, four rails are made use of ; the three lower ones being placed pretty close

to each other, completely exclude pigs or other small stock. Lands for grazing, are generally enclosed with three rails, but large enclosures intended for horned cattle or horses, and especially where timber is scarce, are frequently enclosed with two rails only. The size of the enclosures or *paddocks*, as they are termed, should be regulated by the purpose for which they are intended. Lands for cultivation may be divided into pieces of thirty or forty acres each, where the quantity intended to be cultivated is considerable.

Land for grazing may be thrown into larger pieces, but it is a common fault to make the paddocks too large; the graziers are not able to shift the cattle properly, and make them eat up the grass clean; and a great deal of food is in consequence wasted. These kind of fences are perhaps, under all the circumstances, the best that can be put up in the present state of the colony; if substantially executed, they will stand twenty years, and with a new set of posts, and a few new rails, may be again set up for a further term. Timber, however, is growing scarce, especially in those parts of the country that have been long settled: and it will be necessary very shortly to have recourse to live hedges or some other method of enclosing. Very few attempts have been yet made to raise live hedges, and therefore little can be said about them. The lemon makes a very pretty evergreen hedge, but is slow of growth; the thorny acacias of India and Brazil have been introduced, and most probably will make excellent hedges. The whitethorn is said to assume more the character of a tree, and to bear less thorns than in Europe; but this

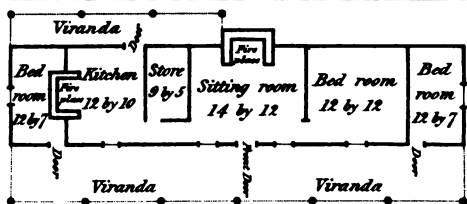
does not appear to be the case with some growing upon my own farm, and it is probable, that by being kept properly trained and brushed back, it would grow more scrubby and make a good hedge. Enclosing with dry stone walls, similar to those used in Derbyshire and other parts of England, has never yet been tried in the colony; although not a very sightly, it is a very durable method of enclosing, and is easily kept in repair. In some parts of the country there is a great quantity of freestone, that lies in thin strata; this will readily split out, and where it lies convenient to the proposed work, would probably be an excellent material for enclosing. Walls of this kind can be set up at moderate charge, and, if properly executed, will stand for ages.

The time and expense bestowed upon setting up the requisite buildings, are among the greatest drawbacks upon the success of a new settler; and on this point the best advice that can be offered to him is, to proceed with extreme caution, and to build nothing that he does not feel to be absolutely and indispensably necessary. Happily the materials for such buildings as are necessary in the infancy of an establishment are generally at hand; and the settler will do well not to expend a single shilling this way more than he can avoid, and to put up with such a dwelling and such conveniences as may be comfortable, which are easily obtained, and defer the erection of more costly edifices till his accumulating means render such an outlay prudent and desirable. The capital that would be required to build a good house and offices at the first commencement of a settler's career, if invested in live stock, and employed in the

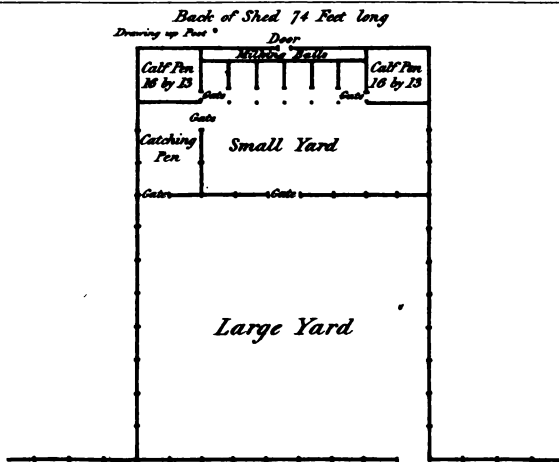
cultivation and improvement of his land, would soon afford him the means of erecting those buildings out of the mere proceeds; whereas if sunk and expended in that way at first, unless his funds are large, he will stand a chance of wanting the means of supporting himself in it. In treating hereafter of labour, and the way in which it is maintained, the prudence of the conduct here recommended, will be more evident; and it will be better to proceed now to describe the buildings absolutely requisite upon a new farm, and the cheapest way of erecting them.

Many persons on first taking possession of land, content themselves with the shelter afforded by a bark hut, while they put in their first crops, or carry on their first and most important operations; and many having once accustomed themselves to living in this way, will rest content with no better habitation for perhaps several years, until absolutely compelled, by the advancing state of population around them, to think of erecting a better. But although in cases where the settler's capital is limited, and it is necessary to apply every shilling to the purchase of live stock and improvement of his land, living in a bark hut may be a necessary and praiseworthy line of conduct; yet those persons who have been accustomed to the comforts and conveniences of a good house, and especially such as have families, might, by submitting to such privations, become disgusted with the hardships of their situation; and it is certainly a prudent step for every one, as early as possible, to construct for himself a decent dwelling; taking care, however, always to bear in mind, that in





GROUND PLAN & ELEVATION OF A HOUSE.



GROUND PLAN OF A MILKING YARD.

such a building, grandeur and ornament must be kept out of sight : and that comfort and convenience are the only requisites to be studied. The annexed plan will perhaps be found to contain all that is necessary for such a building.

This plan comprises a sitting room, three bed rooms, kitchen, and store room ; besides a loft extending the whole length of the main body of the building ; which will be useful for stowing away many articles in perfect security ; and a house of this kind will be found to contain sufficient comfortable accommodation for a moderate sized family. The kitchen, store, sitting room, and largest bed room, are under the main roof of the building ; the small rooms at each end are skillings or lean-to's ; these may be extended out under the viranda if required. Its narrow width will allow of split wood being used for rafters, joists, and beams, which could not conveniently be done were it much broader, as it is difficult to run out split materials straight, when required of a great length. The other dimensions of the house may be altered according to the size of the family, or other circumstances. Having selected a proper site, which should always be on rising ground, so that the house may stand dry and healthy, the next step is to mark out the dimensions and to cut out the foundation with a spade ; some persons lay down sleepers of wood for a foundation, but the best plan is to raise a wall of rough stone, with well tempered loam for mortar, so as to be six inches above the ground at every part, when brought to a level ; strong corner posts should also be put down, and firmly set in the ground, at each corner

of the main body of the building ; this plan indeed exposes the part in the ground to decay, but as the timbers used in the building will be green, and only roughly squared with an adze or axe, it will be difficult to joint and frame it securely ; particularly as it is intended the building here proposed should be erected by common labourers, without any, or with very little, aid from carpenters ; and as it is not expected a house of this description will last for many years, setting the corner posts into the ground will give it a degree of strength and firmness.

Having completed and levelled the foundation all round, risings should next be placed upon it, properly tenoned into the corner posts ; and wall-plates fitted for the top all round ; grooves about two inches deep and one and a half inches wide, should be cut upon the upper side of the risings and the under side of the plates, and into these the ends of split logs or slabs should be fitted above and below, to form the walls, leaving proper intervals with posts for the doors and windows. When the logs are all in their places, the plates may be pegged down and secured ; the inner partitions may then be made in the same manner ; the joists and tie beams put on and secured, and the roof raised. Shingles are the best covering for every description of buildings in this colony, and are split out by men accustomed to the work at 12s. per thousand ; but proper wood for the purpose is not always at hand, and as the settler naturally wishes to cover in his dwelling as quickly as possible, a covering of bark will answer every purpose until he has leisure to procure a better.

The inside should then be lathed and plastered throughout, and also the outside under the virandas, where it is out of the weather; the exposed parts should, if possible, be weather-boarded, and the floors laid with boards. The quantity of sawn stuff required in building a house of this kind is so small, that it is hardly worth while to hire a pair of sawyers to cut it; but in most cases it may be procured within a moderate distance. Weather-board may be nailed up green, but flooring board should be suffered to remain some time before it is nailed down, to allow for its shrinking. Lime is frequently a scarce article, and difficult to procure, very little being yet burnt in the interior, even where limestone is plentiful; the greatest economy must therefore be observed in using it; the chimnies may be built of stone, and well-tempered loam; this, also, mixed with some coarse grass, will do for the first coat of plastering; the second coat should have a portion of lime; and the whole being well whitewashed within and without, will form a very comfortable and decent dwelling. The expense will not exceed seventy or eighty pounds, when completed and shingled, and it may be executed by any man of common ingenuity, without the aid of either carpenters or bricklayers.

Brick buildings are now becoming very general throughout the colony; but new settlers can seldom make use of that style of building at their first commencement; dispatch and cheapness must then be their principal consideration. Sawyers usually construct a temporary hut in the bush where there is plenty of timber, and reside there while the job they are hired for

is in hand. Sawing is performed at the rate of about 10s. or 12s. per hundred feet.

A dairy and milking-yard are places to the erection of which the settler must turn his early attention. The dairy is one of the first things that will begin to afford him a return; and as the breaking in his cows and heifers, and forming his dairy herd, will occupy some time, the sooner he commences the better. An underground dairy is best, and may be erected at a small expense by digging into the south side of a hill, building the walls of rough stone and loam, and covering it with bark or shingles. Stone benches should, if possible, be formed, for the milk pans to stand upon; and the floor should also be paved with stone. The dairy should be divided into two rooms, in one of which a chimney should be built, for the purpose of heating water to scald the utensils. The milking-yard should be situated as near as possible to the dairy: the annexed plan is perhaps as good as can be devised. This plan, it will be seen, comprises two calf pens, six milking bails, two yards for the cows to stand in, and a catching pen. The dimensions and number of bails may be increased or diminished according to the number of cows likely to be kept. The one here delineated will serve very well for about thirty cows. The calf pens should be paved with stone, and, if kept well littered, a considerable quantity of dung may be obtained from them; the small calves should be kept on one side, and the large ones on the other. As dispatch in milking is very desirable, especially where cheese is made, the calf pens should be furnished with small gates on hinges,

which are most convenient for turning the calves in and out ; and the bails should be furnished with good leg-ropes and cleats, to secure the cows' legs. Six or eight cows may be put into the small yard at a time, which will render it much easier to manage them, and prevent their running about when required to be put into the bails. The catching pen will be found very handy, for the purpose of catching young heifers when breaking them in ; this is performed by putting a rope, with a running noose, over their horns, by means of a pole ; and in a large yard is attended with much personal danger, when they are very wild and vicious ; they can, however, be driven into the pen with two or three quiet cows, and roped without difficulty, by a man standing on one of the posts. When properly secured, the rope should be passed through a hole in one of the logs at the back of the yard, to the post behind, where a man should be stationed, to take a round turn, and draw in the slack of the rope as the animal comes up ; by this plan two men will draw up a strong and vicious beast without danger, better than six could by any other means. The back of the yard and the calf pens should be enclosed with split logs, and the milking bails and pens covered with a shed. The yard and divisions should be enclosed with a stout five-railed fence, with strong posts. It must be observed that gates hung upon hinges are very seldom met with ; the usual way of securing such places is, by what are termed *drop rails*. The posts are formed of bodies of trees of a proper size, stripped of their bark ; mortices are cut in each for the ends of the rails ; in one part they are cut of more than

the usual length; the wood on one side of the mortice, at the upper part, is cut away through to the side of the post, so as to allow the ends of the rails to slip in and drop down into the lower half of the mortice; a peg is put in over them, which prevents the cattle from lifting them out with their heads. The best rails for this purpose are round poles, as they are better to handle than split wood. This method of closing a gateway is cheap and economical, and for some purposes preferable to hanging gates, which are continually out of repair.

Comfortable huts for the men should be by no means neglected; many people suffer them to live in dirty and comfortless bark huts, but it is certainly to the interest of every settler, to get his men comfortably lodged as soon as possible. The best and cheapest huts are built of logs, plastered within and without, with a bark or shingle roof, and stone chimnies; fourteen feet long by twelve wide will be found large enough to accommodate three men, and it is better not to put too many together into one hut.

Stables are not much required in New South Wales, especially upon a new farm; the most common log building, with a bark roof, will answer every purpose for some years. Horses in general are most healthy, and better able to endure fatigue when kept entirely in the open air.

Small barns that will take in a moderate-sized stack are best adapted to the colony; they should be built with the doors sufficiently high to allow a loaded waggon or cart to draw in. The barn may be built with lean-to's or skillings all round, which will make useful

granaries and stores, or coves for corn before it is cleaned. A free draft of air through every part of the barn is very beneficial; and split logs, without weather-boards, are no doubt the best materials for the sides. A spacious barn floor is very useful, as thrashing is sometimes the only work the men can be employed upon in wet weather, and it is also particularly useful for the purpose of shearing sheep upon. It is frequently necessary to thrash upon the ground the first year, as it is of no use to lay down a barn floor until the boards are properly seasoned: and the settler should endeavour to get some wood cut for this purpose as soon as possible. The barn should be enclosed by proper yards, in order that the store pigs may be kept about the barn door when thrashing is going forward.

A piggery is a most useful appendage to the farm-yard; the styes may be ranged in a row, paved with stones, and the sleeping place laid with logs. Trunks of sound trees, hollowed out for the purpose, make very good troughs. A yard should be enclosed in front for the purpose of turning the hogs out when it is necessary to clean their styes. A shed also should be erected near at hand, with a large iron boiler set up, for cooking food for the fatting hogs.

A lodge sufficiently large to contain the carts, ploughs, and other implements belonging to the farm, is a most useful building. A grindstone may be set up under it, and some of the men may be usefully employed in grinding up tools in wet weather; and a hand-mill for grinding corn may also be conveniently set up in this situation. A building similar to the hay barns

made use of in some parts of England, being merely a roof set upon lofty posts, would be extremely useful for the purpose of preserving hay and straw, and might also be employed to receive corn in harvest time, especially in wet seasons, as it would thereby be secured at once, without the risk and delay occasioned by the necessity of thatching stacks.

A secure place where the harness and tools belonging to the farm can be kept and locked up, is very essential; part of the stable or cart lodge may be advantageously partitioned off for that purpose. A small strong yard, with a drawing-up post, for the purpose of catching and harnessing the working oxen, is very useful, especially in breaking in young bullocks.

The foregoing are the principal buildings required on a new farm; in erecting them, the settler will do well to proceed with care and caution, and endeavour to set them up in the order in which he foresees they are likely to be wanted. The house, men's huts, dairy, and milking-yard, are generally the first consideration; then the piggery, cart-lodge, and stable; and lastly the barn; this building will probably not be much wanted the first year. The small quantity of grain a settler is usually able to get in the first season, may be very well thrashed out upon the ground in the open air, and if he succeeds in getting up his barn against his second harvest, he is generally quite in time.

One of the first cares of a new settler should be to enclose a sufficient piece of land, for pasturage for his working cattle; until this is done, they are necessarily turned out of a night, and when wanted in the morning,

are very often not to be found, and the whole or best part of the day is occupied in searching for them ; much loss of time and delay of business is consequently occasioned, and nothing can go on with regularity, till this very important point is accomplished.

Many persons on their voyage out, and also very frequently before they leave their native country, amuse themselves with drawing plans of the house, offices, and buildings they intend to erect upon their expected grant. These things look very well upon paper, and may serve to pass away an idle hour ; but very few of these castle builders give themselves any trouble to reflect, that to realize their brilliant and tasteful ideas, would require a sum of perhaps ten thousand pounds, when they most probably are not in possession of as many shillings. Every person, however, when he has actually seen and selected his grant, and decided upon the situation for his farm-yard, (which should not be done without the most mature consideration,) will do well to sketch a plan of his proposed buildings, and to let every thing he undertakes be part of this general plan ; his improvements and buildings will then have an uniform and regular appearance, and much future trouble and labour will be saved. Care must also be taken to allow sufficient room for any future additions, which the advancing state of his establishment may render necessary. And as his surplus produce and means of maintaining labour accumulate, his first temporary buildings of wood, may be gradually replaced with more substantial and convenient edifices of brick or stone.

CHAPTER VII.

CULTURE OF THE VINE.—CLIMATE.—SITE.—ASPECT.—METEOROLOGICAL INFLUENCES.—AND PRODUCTIVENESS OF VINEYARDS.

It would be difficult to find a climate better adapted for the cultivation of the vine, than that of New South Wales, or soils more suitable for it than those which every where abound upon its coast, particularly from Illawarra to Moreton Bay. The great elevation of much of the inland districts may not, perhaps, admit of such elevated portions producing wine; but they contain nevertheless many sites where vineyards would succeed, inferior in this respect as their climate is to that of the coast, if proper vines were selected. There are already many varieties in the colony, some of which are suitable to cold and elevated sites, as proved by their successful cultivation in some of the best vineyards in Europe. What a source of enjoyment would the growth of the vine be to the inhabitants of Yass, Goulburn, Berrima, Bathurst, &c., did they but avail themselves of the natural advantages of those districts by growing wine for their own consumption. Wherever the climate is warm enough for the early or dwarf varieties of maize, wherever the peach or the fig ripen

without the assistance of walls, there the situation would prove warm and sheltered enough to mature the fruit of the vine.

SITE.

The best sites are the sides of gently-sloping hills, sufficiently elevated above the vallies or plains to be beyond the influence of hoar frosts in spring, and the chill humid exhalation occasionally prevalent in such situations. The first, not unfrequently in a single night, frustrate the hopes of the cultivator, by cutting off the young shoots, and the last greatly retard the vintage. Experience in this branch of colonial husbandry shows that a vineyard on the side of a hill, at an elevation of one hundred to one hundred and fifty feet, will usually be three weeks or a month more advanced than vines of a like sort planted in a valley or plain at its foot.

ASPECT.

The most favourable aspects for the vine in New South Wales, are those from east to north, and in the colder or more elevated regions, even round perhaps as far as north-west, but sheltered as much as possible by the ground or by thick wood from the south-south-east round to the north-west. It is difficult to meet with a site comprehending every advantage, but the great object is to have the vineyard open to the full range of the meridian sun, without being exposed either to hot winds from west to north-west, nor to any of the strong land winds usually more or less prevalent in the spring. It is not advantageous, however, to have any sheltering wood, within thirty or forty yards of the vine-

yard, unless it be a low hedge or shrubbery of moderate height.

METEOROLOGICAL INFLUENCES.

The state and temperature of the atmosphere, at certain seasons of the year, is of great importance to the vine. In New South Wales abundant rains during the latter part of the autumn and winter, may be considered favourable, so also is occasional and moderately mild rain until the fruit begins to swell to maturity. In the spring, as already said, the great evil to be guarded against is hoar frost, which in low situations sometimes occurs late in the year, even in the neighbourhood of Sydney, but more frequently in the adjoining inland counties. The damage which these frosts occasion may be prevented in the following simple mode: small heaps of straw, rather damp and mingled with a few shovels full of loose earth, should be placed round the vineyard at intervals of six or eight yards, and if it be extensive, along some of the intersecting cartways. A dray load of this short straw may be divided into from twenty to thirty heaps. If the thermometer and the appearance of the weather over night indicate the possibility of frost, a vigilant look out should be commenced an hour or two after midnight. As soon as the thermometer approaches the freezing point, or falls a little below it, some of the heaps of straw, say every sixth or eighth, should be lighted, and each so managed as to be kept mouldering for about an hour. The dense smoke produced is prevented from rising or dispersing by the weight of the atmosphere. As the straw burns out, fresh heaps should be lit, and care taken to reserve

a sufficient number to occasion the densest smoke at sun rise and for an hour after. By adopting this precaution, the dew is prevented from freezing on the young shoots of the vine, or when frozen, they are not acted upon by the sun's rays until thawed by the slowly increasing warmth of the atmosphere.

With a little attention the vine may at no distant time be extensively cultivated in Australia, and when that takes place, it will have a greater effect in inducing habits of sobriety than all the efforts of teetotal and temperance societies combined. Communities of wine growers are rarely intemperate in the use of fermented liquors, although in the aggregate they largely consume the produce of their own vineyards. Independently of this advantage, there can be no doubt, that as soon as vineyards are extensively cultivated in Australia, wines will be produced rivaling the more famous growths of Europe; but until experience and skill have been acquired in the art, and the multiplied attention of individuals has been directed in this channel, it is not to be expected that wines should be produced of a quality sufficiently good for exportation. Considerable quantities of wine, and some of it of a superior kind, have already been made in New South Wales. Indeed, the ease with which the colonists generally may derive advantage from their own vineyards, is to be gathered from the fact, that for some years past, five and sometimes six individuals have been daily supplied at one estate in the colony, with one pint of wine each, the produce of a single quarter-acre of vines, forming part of an extensive vineyard. By the time these vines

were in full bearing, they did not cost the sum of £15., including the original value of the land, and every outlay, with interest at ten per cent. The annual expense of cultivation, with the management of the vine included, did not exceed £5. Thus, for a sum not exceeding twenty five-shillings annually (less than one penny per day) may every colonist be daily supplied throughout the year with a sufficient quantity of sound wholesome wine. Of this description of wine, an acre of land in New South Wales will produce from 1000 to 1200 gallons, and about half the quantity of superior wine.

CHAPTER VIII.

TRADE.—IMPORTS AND EXPORTS.—WOOL.—ITS SURPRISING INCREASE.—MANUFACTURES.—BANKS.—ROADS.—STEAM BOATS.—TRAVELLING.—CLIMATE.—REVENUE.—LAND SALES.—POOR OF THE UNITED KINGDOM INTRODUCED INTO THE COLONY BY MEANS OF FUNDS SO ARISING.—ADVANTAGES OF COLONIZATION.—MODE OF PROMOTING IT.—WAGES AND PRICE OF PROVISIONS.

THE colony now carries on a very considerable commerce with the mother country and other places. Its collective imports from all quarters amounted on an average of six years to 1841, to £1,700,000 per annum, being little more than £1,100,000 in the first year of the series, and about £2,000,000 in the last.* The greater part of these imports are from Great Britain, and, with the exception of wines and spirits, consist of British manufacture, of almost every variety. A considerable quantity of sugar is imported from the Isle of France, and tea and other articles from China. The principal part of these imports are now paid for in wool, whale oil, timber, hides, cheese, butter, and hams, to which there is some prospect of wine and salt provisions being in a few years added. The weight of wool

* See Appendix, No. 1.

exported from the colony in 1807, the year of its first importation into Great Britain, was only 245lbs.; in 1822 it had encreased to 175,000lbs.; in 1829, to 913,000lbs.; in 1834, to 2,200,000lbs.; in 1837, to 4,600,000lbs.; in 1843, to 8,700,000lbs.

Australian wool is much used for the finer sort of Merinoes, Challies, &c. About the year 1820 it assumed a character in the English market, and it is a remarkable fact that yarn spun from the finer description of combing wools became at this period an article of export from Great Britain to the continent of Europe, and they have since gone on progressively increasing with each other. Wine, of fair average quality, the growth of New South Wales, already meets with ready sale in the colony, and some good samples of it have been sent to England. The increasing quantity of animal food derived from the pastures of Australia, affords the means of establishing a steady trade in salt meat for the supply of vessels which begin to swarm in the Pacific. These are employed in the intercourse now existing between its many islands, and in extending the relations of commerce with the dense population of China, a population which may, perhaps, have recourse to the plentiful subsistence which salt meat from Australia would afford. Skill and capital combined are alone wanting to give the first impulse to this new branch of commerce. Few are inclined to enter on a business of this nature without practical knowledge of the details, but which, no doubt, may be obtained from merchants and other experienced persons in the United Kingdom.

The coasting trade of the colony has now become very great, and as new settlements are formed on the shores and within the many estuaries of Australia, this channel of enterprise will every year become of more importance. Indeed, a very large portion of the commerce which Sydney now possesses, is a coasting or intercolonial trade. Goods are warehoused at Sydney, and transhipped not only to various outports on the coast, but to many of the islands in the neighbouring seas. In January 1841, one hundred and eight vessels, of 4,094 tons in the aggregate, and belonging to Sydney, entered that port, and one hundred and two vessels, of 3,409 tons, departed from thence to no less than twenty-eight neighbouring ports on the coast.

The only manufactures worthy of notice in the colony, are woollens, leather, earthenware, and salt. Cloth manufactured from colonial wools on the spot, although inferior in outward appearance to fabrics of a like sort made in England, are far more durable and substantial. Leather is extensively manufactured in the colony, and of good quality, but the colonists do not avail themselves of this branch of industry to its full extent. Quantities of sheep skins are there turned to no sort of account, although they would find, if either wholly or partially dressed, a constant market in China.

There are seven banks in New South Wales, and the following is a general abstract of the sworn returns, rendered pursuant to Act of Council 4 Victoria, No. 13, of their average assets and liabilities, and of their capital and profits, for the quarter ended 31st December, 1842.

AUSTRALIAN BANKS.

BANKS.	LIABILITIES.														
	Notes in Circulation.			Bills in Circulation.			Balances due to other Banks.			Deposits.		Total Liabilities.			
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
New South Wales	26,213	0	0	....	..	..	194,122	7	2	220,335	7	2			
Australia	16,622	0	0	46,844	7	8	13 15 11	100,838	4 10	164,358	8 5				
Commercial	45,414	4	7	42,077	2	8	82 7 11	145,340	0 10	232,943	16 0				
Australasia	44,539	19	11	37,661	4	3	....	..	289,963	17 7	372,165	1 9			
Union of Australia ..	26,667	15	2	30,464	12	10	81 8 6	191,438	11 4	248,652	7 10				
Sydney	19,669	0	0	....	..	..	....	..	26,570	13 10	46,239	13 10			
Port Phillip	2,496	7	8	....	..	..	2,606	3 8	2,518	11 10	7,621	3 2			
TOTALS.....£	181,652	7	4	157,087	7	5	2,783	16 0	950,792	7 5	1,292,315	18 2			

AUSTRALIAN BANKS, (continued.)

IN NEW SOUTH WALES.

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BANKS.		ASSETS.																
		Coin.	Landed Property.			Notes and Bills of other Banks.			Balances due from other Banks.			Notes and Bills discounted, and all other debts due to the Bank.			Total Assets.			
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
New South Wales.	66,303	7	7	.....	..	14 12 10	.....	..	..	384,673	3	9	450,991	4	2			
Australia	16,156	8	6	46,884	7	8	.....	..	..	1,632	10	4	343,936	3	1	408,609	9	7
Commercial	71,744	18	11	3,276	12	6	1,298	16	4	1,625	6	6	418,637	18	6	496,583	12	9
Australasia	130,485	9	6	14,330	13	4	3,041	15	7	.....	..	..	687,684	10	10	835,542	9	3
Union of Australia.	123,099	1	10	9,569	2	6	.....	..	..	2,213	0	3	558,006	16	9	692,888	1	4
Sydney	23,314	6	1	.....	..	382 12 6	.....	..	..	.....	..	..	179,820	8	6	203,517	7	1
Port Phillip	2,393	10	6	4,607	6	5	881	17	1	2,712	17	7	52,413	4	5	63,008	16	0
TOTALS	£ 433,497	2	11	78,668	2	5	5,619	14	4	8,183	14	8	2,625,172	5	10	3,151,141	0	2

AUSTRALIAN BANKS, (continued.)

BANKS.	CAPITAL AND PROFITS.				
	Capital paid up	Rate per Annum of last Dividend.	Amount of Dividend.	Amount of Reserved Profits after paying Dividend.	
	£. s. d.		£. s. d.	£. s. d.	
New South Wales	206,505 0 0	14 p cent.	13,762 7 0	6,500 0 0	
Australia	224,960 0 0	10 p cent.	11,236 3 4	6,500 0 0	
Commercial	245,030 0 0	12 p cent.	14,668 0 0	10,661 9 11	
Australasia	675,000 0 0	8 p cent.	24,000 0 0	68,318 0 0	
Union of Australia . .	743,525 0 0	10 p cent.	37,000 0 0	46,788 10 3	
Sydney	153,020 0 0	11 p cent.	8,300 1 4	3,147 8 11	
Port Phillip	52,915 0 0	10 p cent.	2,744 2 6	1,392 6 4	
TOTALS	£2,300,955 0 0	10 5.7ths.	111,710 14 2	143,307 15 5	

Note.—Since the foregoing chapter was in press, the credit of the banks in Sydney has suffered severely in consequence of the difficulties in which the Bank of Australia has been involved, through the effects of a bad system of management; these difficulties have in England been generally supposed to have been shared by all the Sydney banks, while in fact they have been confined to one; this will be seen by the following extract from "*The Times*" which is here introduced in order to allay the fears of any of our readers who may be interested in the prosperity of some of the other Australian banks.—ED.

AUSTRALIA.—We much regret to direct the attention of our readers to the following statement, extracted from the *Sydney Herald*, of the panic which existed in the money market there, in May last, and the absurd run upon the savings' bank of the colony. There can be no doubt that this derangement in the affairs of New South Wales has been greatly aggravated by the sudden stop to transportation, and the tardy application to emigration of the large amount of about *one million* sterling raised there by the sale of waste lands. During the period of these sales by government, the wages of labour were enchanced by a ruinous, and in many instances, unavoidable competition of proprietors of farm stock, for agricultural servants, while at the same time the markets in England for the staple export of the colony—wool—continued, season after season, to fall, until they appear to have reached their ultimate point of depression. The price of wool has at length again happily improved, and as the exports of this article from the colony continue to augment, its monetary affairs will gradually assume a healthier aspect, and confidence will be restored. Add to this, when the new Legislature of the colony has met, and in concert with the home government, taken measures for a sufficient and continuous influx of labourers and their families from the United Kingdom, it is probable the affairs of the colonists will be placed on a better foundation than they have possessed for many years.

SYDNEY, NEW SOUTH WALES.—(From the *Sydney Herald* of May 6, 1843.)—"Our next mails to England will carry home the

tidings of disasters to this once flourishing colony. The fast-growing embarrassments of 1841, and the six hundred insolvencies of 1842, have been crowned, in the first third of the year 1843, by the explosion at the bank of Australia, then by the minor explosion at the Sydney bank, and last of all by the run on the savings' bank. These three latter calamities have come in such rapid succession, that before men's minds had recovered from the stunning effects of one shock, they were astounded by the sudden burst of another; and we are convinced that at the present moment there is a deeper despondency, and a more harrowing anticipation of ruin to the colony, than ever before existed since the landing of Governor Phillip in 1788. We may therefore rest assured that besides the diurnal records of the press, which will communicate to our friends in England the public occurrences of the day, private letters, within and without, with lamentations, and mourning, and woe, will go in troops to confirm the melancholy tidings, and even to exaggerate the truth. Now, alive as we are to the stagnation and embarrassment which extend over the whole colony, and sympathising as we do, most sincerely and tenderly, with the multitudes of our fellow citizens whose affairs are reduced to the last extremity, we yet feel bound to say we are far, very far, from looking upon the country as ruined, and should be guilty of a gross dereliction of duty were we to permit these gloomy reports to go to England unaccompanied by such mitigatory representations as we think the truth warrants and requires. In the first place, our British friends, in reading and discussing these sad accounts, ought to remember that, in the intensity and wide prevalence of the present embarrassments of New South Wales, there is nothing new. Our sufferings are not peculiar to the southern hemisphere: they form but a chapter in that history of commercial and agricultural vicissitudes in which the experience of the mother country is so deeply read. Do our farmers and graziers find it difficult to realise returns equal to their current expenses? The farmers and graziers of England have experienced the same, times without number. Do our merchants find markets languid, their stocks large, their sales slow, their

profits small, their losses heavy? The merchants of England have experienced the same over and over again. Has one out of our six joint-stock banks become involved in serious difficulties? Does the manager of another stand charged with a gross breach of trust? And has our savings' bank been harrassed with a two-days' run? These also are tribulations which England has known of old. Bank after bank has there been smashed to pieces. Her Fauntleroy's, her Rowland Stephenson's, her Manchester Burdett's, have rendered her familiar with bank defalcation on a splendid scale. And as for bank 'runs,' even the national establishment of the bank of England has been more than once so nearly levelled to the ground by these financial tornados, that the whole power of the cabinet has been required to save it from absolute ruin. In the next place, our friends in England should understand that our sufferings are not the offspring of natural causes; that they have resulted, not from the act of God, but from the act of man. No pestilence has decimated our population; no drought, nor mildew, nor locust, nor caterpillar, has of late years blasted the fruits of our soil; no earthquake has engulfed our cities, nor spread terror and desolation through our plains. No! Providence has been gracious to us in averting all these calamities. Our community has long been blessed with uninterrupted health; our climate has been genial to man and beast; our earth has been fertilised by the plenteous rains of heaven; our harvests have been abundant; our flocks and herds have multiplied on every hand; our granaries have been filled with all manner of store. The colony is as rich in natural endowments as ever it was; not one of those endowments has been withdrawn by the beneficent hand which bestowed them. By man, and man alone, have all our troubles been brought about; and by man, with the blessing of God, they may and must be removed. The errors of human judgment, are the tyrants by whom alone we have been scourged; and when those errors shall have been superseded by a sound understanding of our true interests, on the part both of the colonists and of her Majesty's government, our affairs will be liberated from the thralldom in which they are now held, our

energies will spring fresh with the buoyancy of hope, and peace and contentment again reign throughout the land. In the third place, it should be understood, that the sufferings of which we complain, though in some respects, precisely similar to those so often experienced in England, are in others essentially different. We have no starvation. We have no famishing poor—no crowded workhouses. We have no wretched families subsisting on three or four shillings a week—no pining females toiling at the needle thirteen hours a day for the paltry pittance of fourpence-half-penny. Our working classes can always find remunerative employment. If one occupation is full, they can get work in another. If labour is superabundant in the towns, there is ample scope and liberal pay awaiting it in the country. We have the necessaries of life in abundance. Yea, we have 'enough and to spare.' Unlike England, so far are we from feeling the pressure of a redundant population, that one great cause of our sufferings is the want of more people to work out the dormant resources of the colony; and one of the human errors to which we have referred, is that which has arrested the tide of immigration. In the last place, we would entreat the capitalists of England, who contemplate emigration, to consider, that as the natural circumstances of the colony are as favourable as ever to the production of wealth, the very intensity of our present monetary derangement furnishes the most advantageous opportunity for the investment of capital in land and live stock. Very many of our large holders are so irretrievably embarrassed, by reason chiefly of the enormously high prices at which their purchases were made, that their property must be sold—sold without reserve—sold at prices as much below its true value as those at which they purchased were above it. This, then, is the time for the arrival of immigrants with moderate capital. They need feel no discouragement because of the absurd extravagance of the upset price of crown lands; for they may have their pick of some of the finest lands in the territory, for cash down, at less than the old minimum of 5s. the acre. And the lands we speak of, unlike the thickly-wooded lands of Canada and the United States, are open plains, ready at once

or either plough or pasturage. We shall scarcely exaggerate if we say, that an immigrant arriving at this juncture, and, perhaps, within the next eighteen months, with £500. in sterling money, may, with that sum, purchase as much land and live stock as would have cost, four or five years ago, as many thousands. The British capitalist, who is pondering as to what part of the world he should emigrate to, should therefore reflect that the time of our extremity is the time of his opportunity, and that there is now a tide in the affairs of New South Wales, which, taken at the flood, will lead him on to fortune."

The principal roads in the colony having been formed with much labour and no inconsiderable skill, might now with ordinary attention be maintained in good repair. "They connect the rich pasture lands of the interior with the town and harbour of Sydney, and the system," says Sir Thomas Mitchell, "although not complete, has at least been sufficiently carried into effect to justify the preference of that town and port as a capital and common centre, not only for roads, but for steam navigation on the coast, which extends about 900 miles in each direction." Upon the leading roads thus described, a moderate toll is collected to defray the ordinary expenses of repairs. In the recently-settled parts of the country, they are in some places almost impracticable, on account of creeks, ravines and rivulets. At first such roads are mere tracks, generally formed by people who have settled themselves, or taken possession of a grazing run beyond the occupied part of the country. Having ascertained the most practicable route to the spot they intend to occupy, the track is marked out by notching the bark of the trees along the

line—a service frequently performed for the colonists by the aboriginal natives, but which to them would be useless, for, without any such assistance, these children of the forest have a most accurate knowledge of the way through woods, however extensive. The track once marked out, becomes a beaten track, and ultimately a broad and well defined road.

Steam boats now ply along the coast from port to port, and stage coaches have for years been established from Sydney to the towns of the interior. These public carriages are furnished with good horses, travel at a rapid rate, and the charges are moderate. Many persons keep curricles, carriages, gigs and other vehicles, which are generally supported without much cost, unless in the towns, where the scarcity of forage often renders a carriage amongst the most expensive luxuries of the colony. In the more distant parts of the country, where roads are not yet formed, the usual mode of travelling is on horseback, although there are many districts through which carriages may be driven hundreds of miles with little other impediment than such as fallen trees present in the passage of an open forest.

There are good inns in the towns and on the principal roads, but in the newly-settled districts it is frequently necessary for travellers to carry their provisions and bedding. The out-settlers in general are extremely hospitable and civil, and will readily receive strangers into their houses, and afford them the best accommodation in their power. Some persons travel in light tilted carts, furnished with a bed and other accommodations; they generally carry their provisions and cooking utensils

with them, and stop at any place on the road at night, where they can find water and grass for their horses or bullocks. Excursions are frequently made by the more enterprising settlers, into the unexplored districts in the interior, sometimes merely for the sake of gratifying their curiosity; at other times in search of grazing runs for their stock, or eligible situations for the purchase of land; and frequently for the purpose of hunting the kangaroo or emu. Some of the black natives are usually procured as guides, they having a most intimate knowledge of the localities of the country. The party is provided with a proper stock of provisions, spare linen, and other necessary comforts, which are carried on pack-horses; each person takes a blanket under his saddle, and generally a great-coat or boat-cloak strapped before him, with a light tether rope coiled round his horse's neck; the fowling pieces are usually carried by the guides; and thus provided, a party may travel with ease and safety any distance their provisions will allow. At night a spot is selected for an encampment, or rather bivouac, where there is water and food for their horses, with plenty of dead wood for firing; the horses are then tethered out, or tied to a piece of wood which they can draw about after them; the black natives strip some bark off the nearest trees that will suit the purpose, and construct a hut sufficiently large to shelter the whole party, with their baggage, arms, and saddles, from the weather; this they will execute in half an hour with ease. In the mean time others of the party kindle a fire, put on the kettle for tea, and commence preparing supper; care is taken to col-

lect sufficient wood to keep the fire up through the night, and if the ground be damp, some strips of bark are dried and laid on sticks, to raise them a few inches off the ground, for sleeping on; in this way journies into the unoccupied parts of the country may be performed with safety and comfort while the weather is fine. I have performed many long journies in this manner myself, without any other attendants than two natives, on whose fidelity I could rely. If the object of the party is to explore the country, little is to be expected from the game they may kill contributing towards the holding out of their provisions, as the pursuit of game is apt to disperse the party and obstruct their progress. But where a party goes out for the purpose of hunting, provided with proper dogs, it is unnecessary for them to carry any animal food, except perhaps a little fat pork or bacon. Persons engaged in these parties rarely feel any ill effects from sleeping on the ground in a fine climate, where coughs and colds are almost unknown.

It is unnecessary for me to go into detail to prove the excellence of the climate of New South Wales, its salubrity being well known and universally admitted. An inspection of the following table will shew the state of the weather from April 1823, to March 1824, which was a remarkably dry and hot year:

ABSTRACT OF METEOROLOGICAL OBSERVATIONS MADE IN THE VICINITY OF SYDNEY, NEW SOUTH WALES.

Year and Month.	Barometer.		Thermometer.		Hygrometer.		Rain at the surface of the Earth.	Prevailing Winds.
	Max.	Min.	Max.	Min.	Max.	Min.		
1823.	Inches.	Inches.	Deg.	Deg.	Deg.	Deg.	Inches.	
April	30,458	29,772	98	49,5	78	40	7,215	Variable.
May	30,442	29,602	74	35	79	26	0,556	S. W. and Westerly.
June	30,350	29,290	70	33	78	25	2,590	Westerly.
July	30,115	29,840	66	28	76	27	5,618	W. and N. W. variable.
August	30,248	29,488	70	32	78	29	0,752	S. E. and S. W.
September...	30,380	29,520	86	37	79	18	0,576	S. E.
October	30,200	29,300	91	42	80	20	2,812	Variable.
November...	30,220	29,860	89,5	45	76	40	1,688	N. E. E. and S. E.
December...	30,110	29,530	101	50,5	72	30	0,493	N. W. and S. E.
1824.								
January	30,300	29,430	105,2	53	68	9	1,576	N. W. and S. E.
February ...	30,300	29,680	102	49	75	35	1,125	Easterly.
March	30,490	29,580	97	44	74	10	1,988	Westerly.
Of the whole Year.	30,490	29,290	105,2	28	80	9	26,989	

Mean Temperature of Twelve Months, by a self-registering Thermometer = $64^{\circ} 4$ —

N. B. Zero of the Hygrometer indicates the greatest drought.

The revenue raised in the colony is principally derived from an *ad valorem* duty upon all imported commodities; from duties upon spirits, wines and tobacco; and from licenses and some other sources.

The following statement shows its amount at each census of the population for twenty years to 1841 inclusive:—

Year	Revenue.	Population.
1821	£ 36,231	29,783
1828	94,862	36,598
1833	138,629	60,861
1836	198,136	77,096
1841	403,592	128,669

Whence it will be seen that this revenue has increased at a far greater ratio than the population throughout this whole series of years. It is wholly independent of the land revenue, or of money derived from land sales, which, by Act of Parliament and usage, is altogether devoted to defraying the expense of the passage from the United Kingdom of men, women, and children, of the labouring class.

In ten years and a half to June 1842 as much as £1,090,583 was derived from these sales, and the total number of people whose passage to the colony was paid out of this fund, amounted to 51,736. Had they been all well selected, or even young persons, upon their first marrying, without the incumbrance of children, their labour might have repaid the outlay for their introduction. Until, however, the true advantages of colonization in a country and climate such as we have described, have, by means of sound instruction, been

more widely diffused amongst the labouring classes in the United Kingdom, few will be found willing to depart from home on first establishing themselves in life. It is not until the pressure of a young family bears hard upon the energies of the poor—whose affection for their offspring nature has no less wisely than strongly implanted in their breast—that the necessity for seeking a better market for their labour is felt, and the benefits held out by colonization in any degree understood by them.*

Whatever money is expended by a colony in the conveyance to it of useless persons, is a serious drawback on its resources. So much time is lost before children attain to an age when they are capable of labour, and, when capable, they are so deficient in skill as agricultural servants, as to have rendered investments of capital in the purchase of land an unproductive outlay. Owing to this cause, the land sales in the colony had nearly ceased, and emigration to Sydney and Port Phillip had, in consequence, been brought to a stand still. Last year arrangements were made in England for conveying 5,000 men, women, and children to the colony; but even were they all productive labourers, this number would be insufficient to supply its wants.

Of 56,700 emigrants of all classes who had arrived in New South Wales during ten years and a half to June 1842, 17,421 were male adults, and many of these were useless hands.

As long as the advantages of colonization are so greatly in favour of the mother country as they now

* See Appendix, No. 2.

are, and while, as at present, she possesses not only a redundant capital, but a redundant population, there is no better mode of employing that capital than in colonization.

Capital expended in conveying to established settlements her insufficiently employed poor, is wholly spent, be it remembered, in her own markets, in providing ships* and requisite stores. Such portions of her population, when retained at home, only tend to diminish her resources, and add to the mass of poverty, and too frequently of crime, the result of that poverty. Her undoubted policy, therefore, is, to promote the influx into the recipient colony of as many of her destitute poor as its labour market will admit, without too great a diminution of wages. And when, as in the case of the Australian colonies, the length and consequent expense of the voyage are such, that ordinary workmen are unable to provide themselves and families with a passage, it is the obvious policy and interest of the colonizing state to advance funds for their conveyance. Capital so required should be raised at the lowest possible rate of interest, but which the colony should be required to pay. The public land in it would ultimately redeem the principal. Additional value would be given to the land by the influx of people, and the greater ease with which labour would be obtained. In this mode not only would capital be created in the colony by labour, skill, and the application of previous acquired capital; but capitalists from other countries,

* In one year to July 1842, the passage of emigrants to New South Wales gave employment to ninety-nine large ships.

would be invited to the colony as a profitable field of enterprise and exertion.

The annexed statement, embracing a space of thirty-six years, shows, that by steadily pursuing some such plan of colonization, the population of New South Wales might be raised, within this period, to nearly 1,700,000 souls, and give to Great Britain an annual export trade of about £17,000,000. It is very improbable that she can ever obtain, by conquest or treaty, any such permanent advantage.

	Population. (^a)	INCREASE.		Cost of Immigra- tion at £15. per head.	AN APPROXIMATION.	
		By Immigration. (^c)	By Births in excess of Deaths.		Average Imports from Great Britain at £10. per head. (^b)	Aggregate Amount.
January 1844	150,000					
" 1850	252,000	In Six Years. 75,000	27,000	£343,750	£2,520,000	In Six Years. £11,625,000
" 1860	542,400	In Ten Years. 200,000	90,400	£2,250,000	£5,424,000	In Ten Years. £37,104,000
" 1870	1,010,880	In Ten Years. 300,000	168,480	£3,375,000	£10,108,800	In Ten Years. £71,424,800
" 1880	1,693,056	In Ten Years. 400,000	282,176	£4,500,000	£16,930,560	In Ten Years. £125,909,760
		In 36 Years. 975,000 (^d)	568,056	£10,968,750 (^e)		In Thirty-six Years £246,063,560

If in the first six years 120,000 Emigrants could be added to the population, these results would be greatly augmented.

(^a) In thirteen years from 1828 to 1841, the Population increased threefold.

(^b) The Imports from Great Britain have heretofore been £10. 18s. per head.—See Appendix, No. 1.

(^c) The average Immigration in four years to Dec. 1841, was about 10,000 per ann. of assisted Immigrants, and 2,500 unassisted. It is therefore assumed, that in thirty-six years 731,250 men, women, and children, will have been introduced by means of Land Sales, or money raised in anticipation thereof, and that 243,750 will have defrayed the cost of their own passage.

(^e) To be raised in 36 years by the gradual sale of Land in the Colony, as in the ten years preceding 1842.

Little more is needed in carrying into effect such a system of colonization, than to provide for the just expenditure of money so raised, by careful selection amongst the candidates for emigration, and by ascertaining from the responsible authorities in the colonies, that the condition of the people who transfer their labour to its shores is improved. The mere account of money wages is by no means a criterion of this point; climate, price of provisions, the nature of employment, with many other circumstances, should be included in every such estimate. They are partly contained in the following statement, which has been recently circulated by order of Government, from returns of the Colonial Agent for Emigration, and the Chief of Police :

1. What is the expense of erecting a country dwelling suitable to an agricultural labourer ?

2. What is the rent of a town lodging suitable to a mechanic and his family ?

3. What funds have been placed at your disposal during the past quarter for the relief of emigrants ?

4. Is there any fund in the colony for the relief of the ditutees poor ?

5. State the description of labour which is in request in the colony.

6. Would the rate of immigration of the last quarter satisfy the existing demand for labour ?

7. Could it be safely increased with reference to the supplies of food in the colony ?

8. State any particulars relative to immigration, and the demand for labour, which you think may be useful.

NEW SOUTH WALES.

1. In general it does not exceed 10*l*. In the Berrima district it is between 8*l*. and 15*l*. In the Bathurst district it is from 10*l*. to 25*l*. In the Newcastle and Raymond Terrace districts about 20*l*. In the Scone district, if bark-covered, 20*l*. if shingle-covered, 30*l*. In the Casalis district, a bark hut 7*l*. a slab and shingled hut 30*l*.

2. In general it is from 20*l*. to 25*l*. per annum. In the Berrima district it is from 4*s*. to 6*s*. per week. In the Macquarie district it is 6*s*. per week; and in the Picton district it is 10*l*. per annum—See answer to question 8.

8. According to the custom of the colony, food and lodging are almost invariably allowed to out-door labourers, mechanics. &c., in the country districts, where alone any considerable demand for labour now exists.

The quantity of food usually allowed is as follows:—

Meat, 7 to 10 lbs.	} or Milk } per week.
Flour, 7 to 10 lbs.	
Sugar, 2 lbs.	
Tea, 3oz.	
	} in lieu.

The average price of labourers' clothing is, at the rates specified in the table of prices, for the most remote, and therefore most expensive districts—

For a labourer, 7*l*. 17*s*. 6*d*.
 wife . . 6*l*. 16*s*. 6*d*.

The present *Sydney* prices of the several articles of food usually consumed by labourers are as follows:—Meat, 3*d*. per lb.; Flour, 17*s*. per cwt.; Tea, 2*s*. per lb.; Sugar, 3*d*. per lb.; Tobacco, 3*s*. 6*d*. per lb.; Soap, 4½*d*. per lb.

The price of a house suitable to a labourer's family in *Sydney* is from 10*s*. to 12*s*. per week, but this price will probably be in a short time much reduced, in consequence of the great extent to which building is now being carried on.

The wives of labourers (if their services are required in ordinary farm occupations) receive somewhat less than half of

the wages and two-thirds of the quantity of food allowed to the husband. Boys of an age for work may obtain from 8*l.* to 10*l.* per annum. Young children requiring the constant attendance of their mother are a great hinderance to the engagement and well-doing of new-coming immigrants, and immigrants so encumbered must be satisfied with a small pecuniary compensation for their labour.

P O S T S C R I P T.

WHILE the preceding pages were yet in type, intelligence reached England of an important addition to the exports of New South Wales, by the conversion of sheep into tallow. A Colonial Newspaper, in announcing this discovery, advises its agricultural readers to use the golden opportunity with discretion, quaintly remarking, "that a sheep shorn may live to be shorn again, but a sheep boiled down is gone for ever." It appears that by boiling down the carcasses of sheep, a sufficient quantity of tallow may be obtained from them to establish a fair minimum price.

Some parcels of this tallow have already been sold in England at forty to forty-two shillings per hundred weight, a price equal to that of Russian tallow of average quality, and which fully bears out the calculations upon which this experiment was founded. From the carcase of a single sheep, the skin and hams excepted, there may on an average be extracted from 25 to 30 pounds of tallow, which at $3\frac{1}{2}d.$ per lb., is worth $7s. 3\frac{1}{2}d.$ to $8s. 9d.$ But adding to this the value of the wool, skin, mutton hams, &c., the sum total yielded by this novel process, will give a minimum ranging from ten to fourteen shillings per sheep.

As the quotations of tallow have now become a question of standard importance to the colony, we have taken pains to collect the average prices in the British

market for several years past ; and we are enabled to state, on authority that may be relied upon, the following facts :—

Average price of ox tallow, in the London market, for the last six years .

		s.	d.	
Year 1837	.....	41	3	½ cwt.
1838	.....	52	0	„
1839	.....	49	7	„
1840	.....	50	1	„
1841	.....	47	7½	„
1842	.....	48	2	„
Average of the six years..		48	1½	„

To show that in the British market the supply of tallow does not, at all events, exceed the demand, we mention the fact, that according to a Parliamentary document now before us, the entire quantity imported in the year 1841, amounting to 1,241,278 cwts. was kept for home consumption. A demand which is increasing, and likely to increase, not only from the increase of population, but also from the extended application of tallow, in combined forms, to the purposes of light.*

It may, therefore, be safely assumed, that the Colonists will find in England a sure and steady market, and remunerative prices for all the tallow, whether from oxen or sheep, which they may export.

An additional advantage will be derived from this discovery, in as much as the flocks will be more care-

* Sydney Morning Herald.

fully culled of old, coarse woolled, or otherwise objectionable sheep.

There is more animal food in the colony than the present population requires; and it is a perfectly legitimate application of the overplus, when the flesh is not wanted for the sustenance of man, to export it as tallow. When the Colonists find that the mother country is at length awake to her own true interests, and will advance upon the security of the unsold lands of the colony, funds wherewith thousands and tens of thousands of her own suffering population may be annually provided with a free passage to its shores, they will retain their sheep for home consumption. It says little for her legislative or administrative wisdom, that at a period when her own prosperity in so great a degree depends upon the number of inhabitants in her colonies, the parent state should be slow to avail herself of the great resources which have been placed by Providence at her disposal.

Instead of resting satisfied with the actual progress of colonization in New South Wales, and the present amount of its population, it would be far better to ascertain whether it might not now have possessed a much larger number of inhabitants, all giving employment to the looms, anvils, and ships of England, had there been a just and timely application of the combined resources of the colony and the parent state. And if after such enquiry hesitation should arise, not on account of the thousands who would be benefitted by such an emigration, but on account of its expense—another question would suggest itself—namely, why land in

New South Wales, which ought to repay the cost of an adequate emigration, should now be unsaleable at twenty shillings the acre, while the same land might readily be sold and resold for as many pounds, did it but constitute part of the United Kingdom? It would be obvious, that it is the facility with which labour is obtained in the one country and its inadequate supply in the other, that in a great degree constitutes the difference. Let it be once understood that the influx of people into the colony shall hereafter be regulated by the means of subsistence it affords, as well as by its demand for people, so that wages shall be at once a fair remuneration for labour, and also in just proportion to the profits of the soil, and there will be no difficulty as to funds,—capital, enterprize, and industry would again seek employment in the ample field which Australia presents.

LONDON,

January, 1844.

APPENDIX.

No. 1.

RETURN OF THE VALUE OF IMPORTS FROM GREAT
BRITAIN INTO NEW SOUTH WALES,*From the year 1826 to 1840, inclusive :—*

Population.		Consumption per head of the Population.
	1826 £280,000	
	1827 253,975	
36,598	1828 399,892	£10 18 6
	1829 423,463	
	1830 268,935	
	1831 241,989	
	1832 409,344	
60,861	1833 434,220	£ 7 2 8
	1834 669,663	
	1835 707,133	
77,096	1836 794,422	£10 6 1
	1837 807,264	
	1838 1,102,127	
	1839 1,251,969	
128,669	1840 1,971,167	£15 6 4
<hr/>		<hr/>
	Total £10,015,563	4) 43 13 7
<hr/>		<hr/>
Average per head		£ 10 18 4½
<hr/>		<hr/>

No. 2.

The subjoined extract from "Papers on Emigration," published by order of the House of Commons in the last Session (1842), fully explains how persons accustomed to sedentary occupations in manufactures make good Shepherds in New South Wales.— (No. 301, page 49.)

THE DUTIES OF A SHEPHERD IN NEW SOUTH WALES.

"The duties of a shepherd in New South Wales are exceedingly simple. A flock usually consists of from 400 to 500 ewes, or from 600 to 1000 dry sheep; three flocks being folded at one station. The shepherd is required to take his sheep from the fold in the morning, not later than an hour after sunrise; to keep sight of them on the pastures throughout the day, and to bring them back at sunset to the fold. They are then counted over, and left in charge of the night watchman; whose duty it is to take care of the flocks in the folds until the morning; when each flock is again counted, and delivered over to the shepherd. In the lambing-season, on well-managed establishments, the ewes about to lamb are withdrawn from the flock and kept separate, under the care either of the watchman or some other person appointed for the purpose, for a few days, until the lambs are strong enough to travel with the flock. At shearing-time, the flocks are brought in rotation to the home station, to be washed and shorn. It is then the shepherd's business (unless he be also a shearer) to follow his sheep and take care that they are kept as free as possible from any kind of dirt, until the fleece is in a fit state to shear; which in general is the case about the third or fourth day after the washing.

"From this account of the ordinary duty of a shepherd in New South Wales, it will be seen that almost any one is capable of taking charge of a flock. Sheep are subject to very few diseases,

and with the treatment of these either the master or the overseer will be conversant. In such cases, the shepherd has only to follow diligently the directions he may receive from those under whose superintendence he is placed; and if possessed of common intelligence he will soon be capable of acting for himself. *In fact, a weaver, or button-maker, after a few months' experience, will generally prove a better shepherd in New South Wales, than the man who, having been brought up a shepherd in England, may have acquired habits or prejudices exceedingly difficult to shake off, however unsuitable to the new position in which he is placed.* In proof of this it may be noticed, that some of the best superintendents of sheep in the colony are natives of London, Manchester, or Birmingham; and that few professed English or Scotch shepherds are intrusted with the care even of a single flock.

"The duty of a watchman is as easy as that of a shepherd: he sleeps by the fold, in a watch-box, trusting to his dogs to awaken him in case of the approach of the native dog or any other cause of alarm; he counts the sheep in and out, and shifts the hurdles. Nor is the life of a shepherd at all irksome to those who have been accustomed to sedentary occupations: on the contrary, such persons have in various instances become strongly attached to it; which will not seem surprising, when it is considered that it is a life of very great ease and freedom from care. Indeed, it is commonly remarked of the shepherds, that they are more healthy and seem much more cheerful and contented than any other class of farm-servants.

"The wages of a shepherd or watchman have been of late about £30. a year on an average, with from seven pounds to ten pounds of meat, ten pounds of flour, two ounces of tea, and one pound of sugar per week, or in the place of tea and sugar, milk*. £20. a year is, however, as much as, at the present low

* "If from 10,000 to 12,000 working hands," (exclusive of women and children), "were to arrive in the colony during the next twelve months, they would not exceed the wants of the colonists. One-fourth of that number would find ready employment as shepherds,"—(page 83),—*July 8th, 1841.*

price of wool, can be given with profit to the sheep-owner ; and out of this sum a man of frugal habits may lay by a considerable sum yearly, more particularly should he learn to shear, by which he may put a few pounds in his pocket every summer in addition to his wages, and still more so should he by care and good management get charge of a breeding-flock, and obtain a prize for rearing a large number of lambs.

“ Again, if he be the father of a family, with two or three sons, from twelve to fifteen or seventeen years old, he may after a short time take charge of a station, the sons going out with the flocks, whilst he acts as watchman ; in which capacity, he will have many hours unoccupied during the day, which may be employed in improving his cottage and making his home comfortable.* He may also cultivate a garden, or even a small field of corn ; whilst his wife would find full employment in domestic matters, the rearing of poultry, &c. ; and should there be daughters of sufficient age, they will be sure to obtain good situations as servants in respectable families.”

*Report from Committee of Legislative Council, Sydney, July, 1841,
BISHOP OF AUSTRALIA, Chairman.*

* “ Your Committee recommend that married couples above forty years of age should be considered eligible for a free passage, if they still be hale and capable of work, and if, in consideration of every two years by which their age may exceed forty, they may be accompanied by one child above the age of ten years :—for example, if the parties be above forty, but under forty-two, they must have with them one such child : from forty two to forty-four two such and so on : and if they shall be above forty-eight, but not exceeding fifty years, (which is the extreme limit), they must be accompanied by five children, the youngest not being below ten years of age.—
(*Extract from Report, page 45*).

COLONIAL CLERGYMEN.

A circular letter to the Head Masters of the chief Free Grammar Schools of England and Wales, from the Rev. EDWARD COLERIDGE, of Eton College, on the subject of Colonial Clergymen.

REV. SIR,—In submitting to your inspection the following extract from a letter, which I have lately received from the Bishop of Australia, and in calling your attention to the important object to which it refers, I beg to assure you, that I am actuated by no motive, but a desire to consult for the best interests of the Church in general, and more particularly for those branches of it, over which the Bishops of Australia, New Zealand, and Tasmania, have been called to preside. It will sufficiently appear, I trust, from the contents of the extract itself, that, in seeking to promote the ends those Right Reverend Prelates have in view, I am but acting in obedience to a command which they have imposed on me, and in furtherance of an object which, from particular circumstances, they think I may assist in carrying out. But I must also add for myself, that my own desire is simply to lay the matter before you, and others situated as you are, for your consideration, earnestly to ask your advice and co-operation, and then to embody the results of my inquiries in a detailed plan, to be submitted to the Archbishops and Bishops, at the Society for the Propagation of the Gospel in Foreign Parts.

The Bishop of Australia, after a very touching description of the arrival, sojourn, and departure of the Bishop of New Zealand from Sydney, thus writes to me on the subject, which I now wish to bring more immediately under your notice:—

“Having thus fulfilled, I trust, our duty towards my excellent Brother’s family and household, and thereby gratified our feelings of affection towards him, I will now turn to a subject, which

formed the occupation of many of the hours which we passed in converse together; and in carrying out our views, we equally looked to your co-operation and assistance. I mean, the human resources, upon which we are to rely, for sending labourers (competent both in numbers and ability) into those vast and as yet uncultured portions of the vineyard, over which we are respectively set in charge. It is this question, which above all others has come home to the hearts of both; because we cannot but be sensible, that, whatever our humble personal efforts may be, we cannot hope to work effectually the work of Him who sent us, unless aided by a sufficient number of men duly qualified to serve God in His Church. The Bishop of New Zealand has with him three excellent and superior persons; and he was surprised and delighted to meet with a number of Clergymen here, who, in point of private worth, professional ability, and correct principles, (I say it with unfeigned thankfulness) would maintain the credit of any Church upon earth. But the question, which arises upon our thoughts, and which formed, as I have said, the subject of many serious conversations, is this,—‘*How is a supply of such men to be kept up?*’ The Society for the Propagation of the Gospel in Foreign Parts has, through the special goodness of Providence, done wonders. But there appears to be at this time considerable difficulty on their part in maintaining the requisite supply; and that difficulty, it is to be feared, is likely rather to increase; especially as, in the contemplation of the Bishop of New Zealand, and of myself, our establishment here, (strengthened, we hope, ere long by the foundation of the See of Tasmania) is but a preliminary to a wide extension of the Church over the vast expanse of the Pacific. The conclusion at which we arrived, was in favour of erecting, under the immediate eye of each, a School of Divinity, in which promising young men (from 18 to 23) might be trained in the knowledge of the duties of their profession, as well as initiated in the practical discharge of them. By means of such Institutions, in addition to what the Society for the Propagation of the Gospel may be able to accomplish for us, we trust that the Church may be supplied with a due

succession of men qualified rightly to divide the Word of Truth. The Bishop of New Zealand has already certain funds and resources applicable to that object, and will unquestionably proceed to make the experiment now under consideration, with the few youths who have accompanied him. In what manner I might hope to lay a similar foundation here, shall be afterwards stated."

"Now I am anxious to direct your thoughts to the mode, in which duly qualified aspirants to the Ministerial Charge may be found out, and forwarded hither to be placed under our course of instruction. It seems to me that the large public Schools, aided by occasional contributions from the smaller foundations, or from private establishments, are quite sufficient to supply the needs of the several professions in England; and I presume that in those Schools, if a boy shews a good disposition and talents, either by exhibitions and scholarships, or in some other way, the means are generally provided for maintaining him at the University, so that his acquirements shall not be lost. But in the smaller Schools, I am no less persuaded, there are hundreds every year doomed to inaction and obscurity, or to some unworthy use of their abilities, who, if they were systematically sought out and assisted very moderately, would supply exactly the description of persons that we should rejoice to have sent out to us, to be trained as Colonial Clergymen; such, I mean, as at the age of 17 or 18 are really ripe and good Scholars, whose hearts are full of pious veneration for those seminaries of sound learning, parts of the Church itself, in which their early proficiency has been acquired; and whose longing desire it is, to devote themselves to the service of that Church, under whose shade they have grown up. The ~~300~~ among them is exactly such as we should wish to have to work upon; and you will seldom, if ever, find it implanted, except in those who have been brought up from early youth in association with the Institutions of the Church."

The Bishop here instances himself as one, who, but for an unexpected legacy just as he was leaving King's School, at Canterbury, would have been excluded from the Ministry, through

inability to maintain himself at either of the Universities ; and then goes on to say :—

“ I do expect, that, if a systematic communication were to be established and maintained between a few of our friends (yourself at their head), and the different public Schools throughout the kingdom, (beginning with King’s College,) a race of well-educated and well-principled young men might be discovered and secured for the service of this vineyard, in which the labourers are still too few. Assuming, then, that there are such persons, it would be a matter for prudential consideration, whether the object proposed could be best attained by assisting them through an English University course, or by sending them to pass four or five years in an establishment here, under the immediate superintendence, inspection, and controul of the Bishop of the Colony. No special recommendation of the former course (that of a home education) occurs to my thoughts, excepting the superiority of advantage in point of scholarship, which it must confer ; but this would not appear to me deserving of so much consideration, as to be set in opposition to numerous benefits attached to their being trained in an Episcopal seminary here (from 18 to 23), and so being habituated to the duties of their future station ; while their characters and capacities would be unfolding themselves to the knowledge of him, who would afterwards have to direct their services, and under whom they would be trained and disciplined to act. It is my firm conviction, that without such an Institution we cannot reasonably hope to make the impression required upon the mass of indifference, and even of worse characteristics, which new Colonies must necessarily, I fear, present. In England, you perceive, when a *passable* man goes into a Parish, he holds together no congregation *in* the Church, and *without* the Church exercises very little influence, except among such as are *already* imbued with a love and veneration of Religion for its own sake. What then, do you think, can be done by a merely passable man going into a Parish *here* or in New Zealand, where a congregation has to be formed *ab initio* ; where there exists *no* feeling of love or veneration ready to his purpose ; but it must be kindled by the

earnestness and ability of the Teacher? You know what the Bishop of New Zealand's acquirements are, and in what spirit *he* has gone forth. Well: be assured that his zeal and talents will not be *more* than adequate to fulfil the purposes of that holy undertaking. It is not to be expected, that we can have all men his *equals* in these respects; but they must be *tales*, if not *æquales*; that is, they must have zeal and talents like his, though a subordinate character. In looking attentively at our position, it appeared evident to both of us, that the first difficulty to be encountered would be the want of funds; and indeed it is a difficulty which, after, and in spite of, all that has been now said, renders me very doubtful, and almost reduces me to despair of success. You have, or will have full means to judge of what the Bishop of New Zealand's purposes may be. I will therefore confine myself to my own case, and will tell you, what it would be my *wish* to accomplish, leaving out of the question for the present, whether resources can be found for the accomplishment of that wish."

The Bishop then proposes, first of all, to purchase, in the immediate neighbourhood of his own residence, a piece of ground, now on sale, as the site of a small College, adjoining a spot which he has already secured as the site of a Church. "Supposing then," the Bishop goes on to say, "the practicability of obtaining the land, the next step would be to erect a small residence for the Principal of the Seminary, who might also be the Incumbent of the Church, and apartments for Students; commencing with *six*, and augmenting the number, as resources should be found, and as need might require."

"You see then my whole plan, which would place such Students during the period of study, and until the age for Ordination arrived, under my immediate direction; and, if they could be chosen already imbued with liberal knowledge and good principles, we might train them up, I hope, through God's blessing, to be faithful and useful for the edifying of the Church. The whole establishment must be conducted on principles of the

strictest frugality ; and, after the first outlay, I believe the regular annual expenditure would be very trifling. The Roman Catholics have such an Institution under Bishop Polding, whose return from England and from Rome they are now anxiously expecting."

Having thus laid before you the wishes and plans of the Bishop of Australia, on this most important subject, I will now take the liberty of asking you to give me such answers, as you can, to the following questions :—

1. May I rely on your kindly co-operation, both individually and officially, in this matter ?

2. Do you think it *probable*, that the School now under your care would, from time to time, furnish youths, such as are described by the Bishop of Australia, to Institutions in the Colonies, such as he proposes to found ?

3. Or, supposing Collegiate Institutions, such as have been spoken of, to be provided in England, in Cathedral Towns or elsewhere, with a view to the education of young men expressly dedicated to the Ministry in the Colonies, and more especially for the three Dioceses above named, do you think that the School under your management would be likely to contribute to them a fair proportion of Students ?

4. Do you think that the Trustees and Governors of your School would be able and willing to assist in their private or official capacities in the education, either in England or in the Colonies, of such Students ?

5. Do you think that the Students themselves would be able and willing in many instances, either to maintain themselves during the period of their education on the simple scale proposed, with the certainty of being ordained, if worthy, at the Canonical age ; or at least to meet half-way such assistance as the Church Societies, or private persons, might be ready to contribute ?

In conclusion, let me intreat you to receive this letter in

the same kindly and single-hearted spirit, in which I humbly believe it has been conceived and written ; to give the subject of it your serious consideration ; to supply me with the fullest answers you can to the five questions appended to it, and with any other advice or information which you may deem useful ; and to believe me,

Rev. Sir,

Your obedient and faithful Servant,

EDWARD COLERIDGE.

ETON COLLEGE,

December 18th, 1842.

THE END.

[Extract from the Times, February 27, 1844.]

Sydney papers to the 11th of October last have arrived, and are about ten days later than previous accounts. The Legislature was wholly occupied with local subjects of administration, and an education plan under its consideration was the only question which appeared to attract any attention. Every endeavour was making to reduce expenditure, and gaol discipline, with the funds necessary for its support, was a matter of some inquiry. A reduction of official salaries was also contemplated. Increased confidence among the mercantile interest had taken place, consequent upon the improved results of the sales of the Australian fleeces in London and Liverpool; and the papers remark in an exulting spirit, that a considerable augmentation will be found, not only in the bulk, but also in articles of export this season. The eight vessels on the berth for London at the date of these advices had not completed their cargoes; but, nevertheless, the shipments already made included 650 bales of wool, 951 tierces of beef, 376 casks of tallow, 3849 and 10 tons of hides; large quantities of bones, horns, bark, treenails, cedar, gum, sperm, and black oil. With respect to the regulation of sales of public lands, the committee appointed to inquire into the subject have determined in future that 5s. per acre shall be the fixed price.

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